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AGRANULOCYTIC ANGINA WITH REPORT OF A CASE.

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This is a term coined by Schultz, of Germany, in 1922, to describe a group of cases characterized by an acute onset with high fever, stomatitis, a marked leucopenia either with an absence or pronounced diminution of the polymorphonuclear leucocytes, and a relative increase in lymphocytes up to 100 per cent. In 1924, Lovett[1] was accredited with the first case reported in the United States. Bruggemann[2] states that similar anginas are mentioned in the literature back in the 80's and thus raises the question whether or not these were also cases of agranulocytic angina. The term "monocytic angina" is also sometimes applied to it.

Most of the cases reported have had counts below normal—even to a few hundred cells—but in a few, the count has been normal or even above normal for at least a part of the illness.[3]

Etiology

Though the etiology is still obscure, the consensus of opinion seems to be that the disease is not a distinct entity; at least no specific agent has been found. These cases resemble closely the picture prescribed by any overwhelming infection in which there occurs a neutrophile leucopenia. In Klein's[4] mind is a question as to whether or not the disease is a definite entity and whether or not the disease would not be found oftener if we studied the moribund more carefully.. Bruggemann states that "whether in agranulocytosis we have to deal with a disease that has a special inciting agent, or with the absence of a hormonal factor, or whether we have to deal with the primary autotoxic or exotoxic impairment, must be left to further investigations." Zikowsky[5] quotes Schultz as follows: "It may be assumed that the affection involves an extensive injury of the spinal cord in the domain of the granulocyte system, caused by an infection." He, himself, states that it seems that in agranulocytosis the bone-marrow is so poisoned that the activity of the leukopoietic system is suspended. He adds further that the disease is only a symptom of sepsis. According to Weihmuller,[6] hemocultures are generally negative. Further, that "in rare positive hemocultures and in smears of gangrenous lesions only were found common organisms, streptococci, staphylococci, colon bacillus, etc., bacteria that habitually do not produce so pronounced leukopenia. On intraperitoneal injection of blood into guinea pigs, the clinical picture could not be produced. Neither did the exudation of the ulceronecrotic lesions of the throat of patients placed on the tonsils of rabbits reproduce the lesion." Kastlin[7] admits that the blood changes are result of the primary action of an unknown etiologic agent on the bone-marrow. Cultures from the oral cavity showed no uniformity of organisms and in only six cases were bacteria demonstrated in the blood. B. pyocyaneus has been found in the throat of several cases and in the blood in one. Vincent's organism appears to be a frequent finding in the inflammatory sites but rather expected in view of its "buzzard" characteristic. Kastlin is impressed with the fact that there is no epidemic character of the disease.

Pathology

Kastlin reports that a stomatitis is always present. In the forty-three cases analyzed by him he found ulceration and necrosis in the following order of frequency: tonsil, nineteen; throat, thirteen; gums, nine; tongue, six; larynx, five; esophagus, two. In twenty-five of the cases a membrane was present. Extra-oral ulcerations were present as follows: stomach, nine; vagina, eight; ileum, six; colon, five; anus, four; duodenum, two; rectum, two; cervix, two; symphysis, two; hip, one; conjunctiva, one. Another author reports that necrosis of the skin was seen in one case. Cutaneous petechial hemorrhages were clinically

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noted in eight cases while visceral petechial hemorrhages were found at autopsy in twelve cases. In fifteen cases, regional lymph node enlargement was noted. The liver alone was enlarged in five, the spleen alone in seven, and both in seven cases. Endothelial cell proliferation was frequently present in the spleen and lymph nodes.

At autopsy, typical necrotic lesions have been found throughout the gastro-intestinal tract as well as in the spleen and lymphatic system.

The characteristic feature of the blood change is the marked neutrophilic leukopenia with a relative increase in the lymphocytes. In the bone-marrow there is almost a total absence of granulocytic cells but a predominance of lymphocytic and endothelial cells. Kastlin reports that Zadek, Schultz, and Jacobwitz found the same to be true in the living when they examined bone-marrow removed from the sternum in three cases.

A slight secondary anemia is the usual finding. Friedemann,[8] in reporting his series of twenty-nine cases, states that in the majority of them the absolute number of erythrocytes was reduced but in a few cases they were either normal or slightly increased. In a case reported by Tynes[9] the erythrocytes were 5,760,000. As to the platelets, Kastlin reports them as normal in twenty out of twenty-seven cases recorded. Friedemann gives them as normal or increased in all of his cases. There appears to be no change in the clotting time, retraction of the clot, nor the bleeding time.[10]

As to the inflammatory sites, Kastlin reports that wherever found they have a similarity of appearance and show a marked lack of cellular response with no polymorphonuclear reaction.

Symptomatology

This disease occurs at all ages in both sexes, but more often in the female, Kastlin reports 78 per cent in females and 22 per cent in males. The average age of the females was forty-six, and the males twenty-nine. The extremes of ages were four and one-half years and seventy-four years.

Though the symptoms are not constant there are several outstanding features frequently noted. The onset usually comes in a period of good health preceded by a definite illness but "occasionally, however, it may occur in persons who have been ill for some time with a chronic disease (Klein)." The onset is sudden and characterized by a rapid rise in fever, ranging from 100° to 105° F., a general feeling of illness, and serious necrotic processes in the mouth, tonsils, tongue, or pharynx. Kastlin, Klein, and others state that a stomatitis is always present. Chills, dysphagia, and aches may accompany. Less frequently do ulceronecrotic lesions occur in other mucous membranes of the esophagus, stomach, intestine, anus, and vagina. "At times there are produced infiltrations of the mouth and edemas of the skin that present the characteristics of not arriving at suppuration (Weihmuller.)" There may be regional adenopathy and enlargement of the liver and spleen. Slight jaundice is common and more pronounced if the disease is prolonged. Less frequently do herpes, headache, muscle pains, or vomiting occur. In only two out of forty-three cases reviewed by Kastlin did bleeding from mucous membrane occur.

Course

The disease is of short duration, lasting from a few days to as many works. Kastlin gives the average range from four to eight days and the extremes two to forty-two days. The course of the condition is almost always fatal with a mortality rate of about 90 per cent. Out of the forty-three cases analyzed by Kastlin only three recovered. The three cases that came under the observation of Ashworth and Hines[11] terminated in death. In one-half of Friedemann's cases it ended fatally in eight days and was protracted in others from twenty-four up to sixty days. Massive pneumonia is a frequent cause of death. Coma often preceded death in the cases reported by Kastlin.

In the few cases that recovered, the blood picture returned to normal. Several in which there was apparent recovery were followed in a short time by reinfection or relapse and death. A case of Moore and Weider succumbed to a second attack after a two year interval of good health.

Diagnosis

This rests chiefly on the blood examination which shows a great reduction in leucocytes affecting mainly the granulocytic series which are either absent or reduced to exceedingly

low percentages. The lymphocytes are relatively increased.

A differential diagnosis must be made in the main from acute poisoning by thorium, arsenic, benzol, and the Roentgen rays; the acute leukemias, aleukemic leukemia, sepsis, and Ehrlich's plastic anemia.

The poisons listed may produce leukopenia but may be ruled out by the lack of a toxic history.

The leukemias show a somewhat similar onset, especially the acute lymphatic form. In these, bleeding from mucosae and petechial hemorrhages are, however, constant and usually precede gangrene. There is a hyperleukocytosis usually above 50,000 with abnormal and immature cells. Anemia is generally more pronounced and rapid.

In cases of aleukemic leukemia the differential diagnosis may be difficult when leukemic elements have not been produced. Nevertheless, in these cases of hypoleucocytosis it is not so considerable, the diminution of polys is not so intense, and usually immature and abnormal elements are encountered early. Later, the blood picture tends to assume the leukemic form.

Cases of sepsis have been described showing neutrophilic leukopenia, a relative lymphocytosis, and stomatitis similar to agranulocytic angina but few cases of the latter have shown positive blood cultures and, at autopsy, septic splenitis is absent.

Merely to mention the fact that several cases were diagnosed as diphtheria and in others Vincent's organisms were found predominating the bacterial flora should put the physician on his guard.

Treatment

The etiology not being known the treatment is especially symptomatic. Local treatment of the inflammatory sites seems to be a matter of choice with physicians. Arsphenamine, tartar emetic, diphtheria antitoxin, non-specific protein, and transfusion have been used. Transfusion has not given any encouraging results up to the present although Hoch[12] reports a recovery in a patient with a leucocyte count of only 1,200 following a transfusion of 500 c.c. of blood. X-ray treatments over the long bones with carefully controlled small doses seem to offer the best hope. Friedemann reports six cases as cured by irradiation. Drs. Call, Gray, and Hodges[13] reported a case with recovery after Roentgen-ray therapy. A total of seven cases treated by irradiation and followed by a prompt improvement in the blood picture, throat manifestations, and return to normal seems to indicate very strongly that the treatment was responsible for the results.

Report of a Case

Mrs. M. D., a white woman, aged thirty-one, was admitted to the Petersburg Hospital, February 14, 1929, at 9:30 P. M.

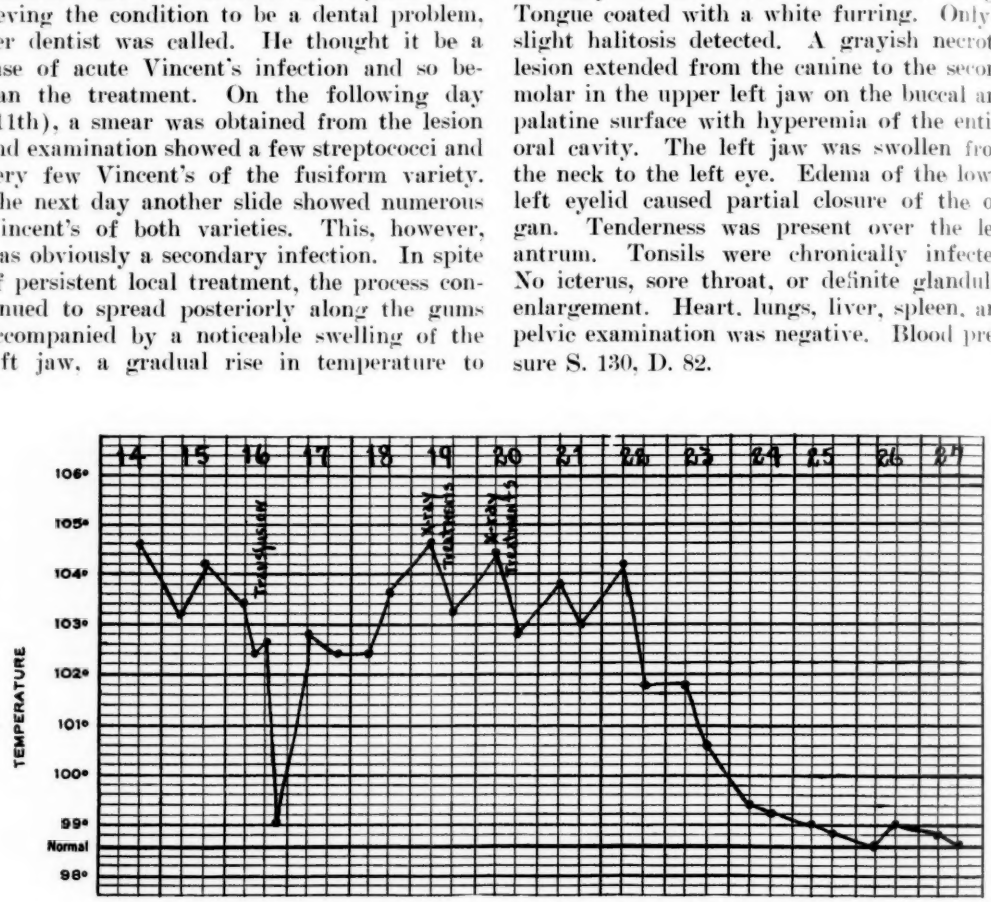
Family History: Negative.

Past History: Other than ordinary attacks of colds and tonsillitis, her health had been good. On December 28, 1928, she had a mild case of grippe which lasted three or four days.

Present Illness: In January, 1929, she went on a motor trip with her husband to Hot Springs, Ark. On the return she contracted tonsillitis. When seen at home on February 1st, her throat was slightly sore, temperature 100.5° F., and tonsils of the imbedded and infected type. No membrane present. On the dorsum of her tongue near the tip was a small, painful ulcer the size of a pin-head. Her nose felt somewhat sore. By the 4th her temperature had returned to normal, and on the following day she was up. On the 6th her husband called and stated that her nose and throat was so dry that it made breathing difficult. A nose and throat specialist was taken to see the patient and, as we walked into the room, she was up and stated that she felt all right. Examination by the consultant showed her nose negative, ulcer on tongue healed, and infected tonsils which he advised should be removed. No sore throat was complained of. Her temperature was 100° F., so she was advised to go to bed. On the 9th her temperature had increased to 101.8° F. and attention was called by her to a soreness in her gums of the upper left side. On elevating the lip, an inflamed, reddened area about the size of a dime was observed on the gums in the region of the bicuspid. This was shown to her husband and he was told that it seemed as though the trouble was here. On the following morning (Sunday) it was obvious that the condition was progressing rapidly. A thick, necrotic area of a yellowish-gray color had replaced the initial lesion and gave the appearance of a pointing abscess. No

fluctuation or bleeding of gums was present. No particular odor was noticeable. She complained of increased soreness in her gums. Believing the condition to be a dental problem, her dentist was called. He thought it be a case of acute Vincent's infection and so began the treatment. On the following day (11th), a smear was obtained from the lesion and examination showed a few streptococci and very few Vincent's of the fusiform variety. The next day another slide showed numerous Vincent's of both varieties. This, however, was obviously a secondary infection. In spite of persistent local treatment, the process continued to spread posteriorly along the gums accompanied by a noticeable swelling of the left jaw, a gradual rise in temperature to

Physical examination showed a well nourished woman of the short, obese type who appeared critically ill. Her teeth had numerous fillings. Tongue coated with a white furring. Only a slight halitosis detected. A grayish necrotic lesion extended from the canine to the second molar in the upper left jaw on the buccal and palatine surface with hyperemia of the entire oral cavity. The left jaw was swollen from the neck to the left eye. Edema of the lower left eyelid caused partial closure of the organ. Tenderness was present over the left antrum. Tonsils were chronically infected. No icterus, sore throat, or definite glandular enlargement. Heart, lungs, liver, spleen, and pelvic examination was negative. Blood pressure S. 130, D. 82.



102.2°, the pain in the region of infection severe enough to require opiates for relief. By February 14, at 7 P. M. her tempertaure reached 104° and she complained of a drawing sensation and tightness in the entire left side of her face as well as intense aching. Two dentists were called in as consultants. They agreed that Vincent's infection was secondary; that the process was spreading posteriorly; and that the left antrum was markedly congested or contained pus. She was moved to the hospital that night.

On admission her temperature was 104.6°, pulse 110, and respiration 30. Leucocytes 5,650, hemoglobin 55 per cent, polymorphonuclears 1 per cent, and lymphocytes 99 per cent.

Ice compresses were applied at short intervals to left jaw. Sodium perborate was used as a mouth wash. Mercurochrome was applied to the necrotic lesions. Liquid diet ordered. A codein-aspirin combination was given to relieve pain. She spent an uncomfortable night, sleeping only at intervals.

February 15th: She complained of severe aching in the left jaw. An X-ray of the skull, sinuses, and lower jaw was made with report as follows:

The films show the skull from various directions, the nasal accessory sinuses and the left halves of the upper and lower jaws.

The skull is normal in appearance.

The left frontal sinus is extremely dense

and its outline very indistinct due to its being filled with pus and granulations. The right frontal sinus is a little denser than normal but not completely filled. The ethmoids are clear on both sides. The left maxillary antrum is about two-thirds filled, apparently with granulation tissue and a little pus. The right maxillary antrum is about one-half filled with granulation tissue.

The sphenoid sinus is very cloudy; however, it is not completely filled.

The examination rules out bone destruction about the apices of the lower left lateral incisor, canine, first and second bicuspids and the first molar teeth and about the upper left central and lateral incisors, first and second bicuspid teeth.

Wassermann was taken and later reported as negative. Streptococcus vaccine, one-half c.c. was given. Quinine, grains four, was administered every four hours to tolerance. Blood for culture taken did not show any growth up to twenty-three hours. Patient perspired freely at times.

During the day approximately a dozen physicians were called in as consultants. Varied diagnoses were made as streptococcus infection, acute lymphatic leukemia, severe oral sepsis, and acute Vincent's. Several were non-committal.

Toward night the swelling in face increased. Edema was noted in the right eyelid. She complained of pain in throat and severe pain in right jaw. During the night she continued to perspire freely. The streptococcus vaccine was increased to one c.c. She seemed to have a fairly good night and her condition was apparently a shade better.

February 16th: Smears taken from the necrotic lesions were reported positive for Vincent's organisms. During the morning she rested better. Later she complained of aching in her face and slight difficulty on swallowing. She talked and mourned while sleeping. Another one c.c. of streptococcus vaccine was given. Whiskey was ordered to be given patient. A slight halitosis noted. At 10:30 A. M. a diagnosis of agranulocytic angina was made by the writer. This was agreed with by one of the consultants who also committed himself in writing later in the day. At 4:20 P. M. 500 c.c. of citrated blood was given. At 5:10 P. M. she had a chill which lasted seventeen minutes. She perspired freely and felt tired. Pulse volume was good. Her temperature dropped to 99 as shown by the chart. She began to expectorate a small amount of yellowish sputum. At 7 P. M. the patient claimed she felt stronger and better. The swelling in her face had decreased and her condition seemed improved.

During the night she continued to perspire freely and expectorate yellowish sputum. Towards morning she became nervous and complained of being sore over her entire body. In all she had a fairly good night.

February 17th: She was very nervous and so tired that she was unable to go to the X-ray room for treatments. No pain was complained of. Fairly good day, however, though her temperature returned to 102.8.

During the night she was so nervous and restless that luminal was required. Still expectorated yellowish sputum. Nourishment was refused. She had an uncomfortable night. Towards morning she complained of flatulence but very little pain. Edema of jaw not as pronounced. Protargol used in nostrils.

February 18th: She began the day by being nervous and at times drowsy but no particular pain. Later, she became more comfortable. Swabs were taken from mouth again for a complete bacteriological report. The direct smear showed staphylococci, streptococci, pneumococci, micrococcus catarrhalis, and many saphrophytic organisms of various kinds. No organisms of Vincent's were found. The culture did not show any additional organisms. She complained of slight aching in lower abdomen and of being a little nervous but in all she had a fairly good day.

During the night she perspired freely and for a short interval became very nervous, restless, and groaned in her sleep. Once she complained of aching all over. She seemed very toxic and even refused her nourishment.

February 19th: Halitosis more pronounced. Dioxygen, one-half per cent solution was used to irrigate gums. She appeared drowsy and complained of aching in lumbar region. Roentgen treatments of long bones started.

At 8:15 P. M. a consultant from Richmond who had three similar cases arrived and agreed with the diagnosis of agranulocytic angina. His prognosis was grave with about a 10 per cent chance for recovery. At his suggestion, Lilly's liver extract (one ampoule in orange juice) was commenced and given three times

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daily. During the night she complained of pains in back and jaw and of being nervous.

February 20th: She rested fairly well. Small boils were noted on the anterior surface of each arm at the elbow and on the left ankle. Small particles of tissue noted sloughing from mouth. Complained of backache. She was taken to X-ray room for further treatments. Complained of a spongy feeling in her from pains in her back, up to 9:30 A. M. After that time she was more comfortable, but had pains in chest towards morning.

February 22nd: Heat rays were applied to back, abdomen, chest, and shoulders for pain and relief afforded. Had a very good day.

During the night, swelling in the left jaw was more noticeable. She complained of pain in her mouth a great deal up to 10:00 P. M.

BLOOD

DATE	R. B. C.	LEUCO.	HMG. Per Cent	NEUT. Per Cent	LYM. Per Cent	L. MON. Per Cent
2-14	.....	5,650	55T	1	99	.
2-15	3,970,000	3,600	69S	3	91	5
2-16	3,940,000	2,800	68	3	91	6
2-17	3,216,000	3,150	..	4	96	.
2-18	3,590,000	2,800	70	4	94	2
2-19	3,295,000	2,600	69	4	88	8
2-20	4,030,000	2,800	73	7	90	3
2-21	4,035,000	2,600	73	14	71	15
2-22	3,930,000	2,800	71	11	77	12
2-23	4,060,000	3,400	73	19	74	4
2-24	.....	5,400	..	43	57	.
2-25	4,130,000	5,600	75	35	63	2
2-26	4,100,000	7,200	74	47	51	2
2-27	4,150,000	7,600	77	49	49	2
2-28	4,230,000	8,400	80	51	47	2
3-1	4,220,000	9,000	82	60	38	2
3-2	4,260,000	9,200	82	54	45	1
3-3	4,256,000	6,700	..	38	62	.
3-4	4,220,000	8,600	83	57	42	1
3-5	4,240,000	9,600	84	53	46	1
3-6	4,230,000	8,800	83	58	41	1
3-7	4,270,000	9,600	83	60	37	2
3-14	4,310,000	8,400	84	61	37	2

URINE

DATE	APPEARANCE	SP. GR.	REACTION	ALBUMIN	SUGAR	CASTS	R. B. C.	W. B. C.
2-15	D. amber S. cloudy	1.018	ac.	Heavy trace	Neg.	Occas. Hya. and F. Gran.	V. Rare	Rare
2-18	Cloudy Straw	1.010	ac.	Heavy trace	Neg.	V. rare F. Gran.	Rare	Rare
2-25	Straw V. cloudy	1.011	ac.	Faint trace	Neg.	Hyaline V. rare	Rare	Rare

Bile reported as negative.

mouth. In all she had a fairly good day and improvement could be noted in her condition.

February 21st: Soreness and aching in back as well as nervousness complained of. Particles of tissue continued to slough. Pains in abdomen. Sclera of eyes had a definite yellow tinge. Percentage of polys had increased from 7 per cent the previous day to 14 per cent.

During the night she was uncomfortable but after that had a good night. Condition seemed better. It was now thought that she at least had an even break for recovery.

February 23rd: A small amount of loose, necrotic tissue was removed from her mouth. A moderate edema of left side of face was present. She complained of soreness in left jaw often. Cervical glands were slightly en-

larged and tender, especially those of the left side. She rested well during the day.

She also spent a more comfortable night. The swelling in the left jaw seemed to have decreased. A decided drop in temperature was recorded.

February 24th: Very little swelling noted in left side of face and neck. Boils were still present. She was allowed to use a back rest. Temperature continued to drop. Marked improvement in leucocyte count noted. Total now 5,400, neutrophiles 43 per cent, and lymphs 57 per cent.

During the night she was very comfortable. It now looked as though her chances for recovery were good.

February 25th: Condition of mouth improved. Patient put on soft diet.

February 26th: Appetite good. No pains. Boils healing. A comfortable day and night.

ROENTGEN TREATMENTS

DATE	SPARK GAP	M. A.	DISTANCE	TIME	FILTER	AREA
Feb. 19th.....	8½	4	20	6 min.	6 m. m. Aluminum	Five areas, including all long bones of lower extremities.
Feb. 20th.....	8½	4	20	6 min.	6 m. m. Aluminum	Four areas, including all long bones of upper extremities.

February 27th: Mouth continued to improve. Appetite very good.

February 28th: Patient put on regular diet and allowed to sit up in chair for short time. No pains or complaint at all. Sodium perborate discontinued and normal saline used as mouth wash.

March 4th: By this time she had recovered sufficient strength to walk about the room and on the 7th she was allowed to go home. At this time her blood analysis was as follows: erythrocytes, 4,310,000; leucocytes, 8,400; hemoglobin, 84 per cent; polymorphonuclears 61 per cent; lymphocytes, 37 per cent; and large mononuclears, 2 per cent.

COMMENT

The writer, perhaps, should apologize for reporting this case in detail but those who have had the unfortunate experience to see a similar case or cases can appreciate his position, especially when this disease has not been given a clinical classification. Further, he hopes that sufficient data has been included to allow one to formulate an opinion as to etiology of this comparatively rare and highly fatal disease. Until further light is shown on the subject, the writer must agree with others that the disease is not due to a definite entity but appears to be the result of an overwhelming effect of mixed bacterial toxins in an individual whose resistance is already lowered by some preceding illnesss.

As to the treatment of this particular case, the one outstanding feature is the part X-ray apparently played. The noticeable improvement in the blood analysis, mouth condition, and rapid recovery following its use would indicate that it at least was a strong factor for the results obtained. Because of its importance the writer requested Dr. Clarkson to furnish him with his method of treatment which was given as follows:

found normal. She was recently seen and stated that she felt just fine.

The patient's blood count has been made since her discharge from the Hospital and

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AGRANULOCYTIC ANGINA—WITH REPORT OF A CASE.*

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Between the years 1922 and 1928, there have been forty-nine cases reported, in which the cardinal symptoms have been agranulocytic leukopenia accompanied by a painful angina, gangrenous and necrosing in nature. To this condition Schultz[1] applied the name, agranulocytic angina. Of the forty-nine cases reported, six have recovered.

The etiology of this malady is unknown. The literature suggests many possible etiological factors: a dysfunction of the endocrine system, bacterial sepsis, some unknown toxin in the bone marrow, have all been considered by the different authors without arriving at any satisfactory conclusions.

The symptomatology in the various cases reported has in some respects been varied. Some cases have had jaundice, some lymphadenopathy, and in some the presence of the symbiotic spirillum of Vincent and fusiform bacillus has been demonstrated in smears from the oral lesions; but, in all of them, the stomatitis, accompanied by a neutrophilic leukopenia, sometimes absolute, and a relative lympho-cytosis, have been the outstanding symptoms.

The diagnosis depends largely on the laboratory findings, in examination of the blood, along with the presence of the gangrenous stomatitis and angina.

The blood picture sometimes shows a decrease in the granulocytic elements, as in the case reported here, a complete absence of the neutrophilic element. The early or immature types do not appear. Occasionally large lymphocytes with a deeply basic staining nucleus are found. These are probably degeneration types. As the disease progresses, the number of leucocytes diminishes and a white count of extremely low total results. In the case reported here, the total count on the day of death was 800 cells per cu. m.m. A mild secondary anemia accompanies the disease.

The stomatitis is painful and usually manifests itself by the presence of gangrenous, necrotic ulcerations on the tongue and gums. The tongue becomes swollen and red, swallowing is difficult. The throat in many cases becomes the site of similar ulcerations and is red and swollen about the site of the ulcers.

Smears and cultures from the mouth and throat reveal a myriad of organisms—the streptococcus, staphylococcus, pneumococcus and the other organisms whose habitat is the respiratory system are found, and in some cases B. pyocyaneus and the organisms of Vincent's are found.

Blood culture is usually negative. There is usually some adenopathy of the cervical chain due to the angina, but the appearance of general adenopathy is not usual. The spleen may be enlarged. The condition is differentiated from leukemia, both acute and aleukemic, by the blood picture; from sepsis by the blood picture and blood culture; and from poisonings—such as benzol and arsenic—by the blood picture. Fulminate diphtheria is differentiated by the blood picture and throat smear and culture.

The prognosis is extremely bad, but not hopeless.

The pathology revealed at autopsy in the cases reported by Kastlin[2] presents the signs of the terminal pneumonia infiltration of the spleen by mononucleocytes and evidence that the bone marrow had been the site of destructive processes.

There is very little suggested in the literature along the lines of treatment. Hueper[3] suggests transfusions, Roentgen therapy over the long bones in stimulating doses, and the use of polyvalent antistreptococcus serum. All three of these suggestions were used in the case presented here without success.

Case Report

Patient, L. C. M., female, white, single, aged forty-three, member of a cloistered order.

Chief Complaint: Swelling of right foot and ulcers of tongue and gums.

Family History: Mother died of tuberculosis at forty-one years. Otherwise negative.

Past History: Had typhoid fever at fifteen years, and had neuralgia at twenty-two, relieved by removal of tonsils. History reveals no past illnesses referable to cardio-respiratory, gastro-intestinal or genito-urinary systems.

Menstrual History: Began at thirteen years, regular, no dysmenorrhea. Last period just completed.

Weight: Usual, 170 lbs. Present, 173 lbs.

Present Illness: Patient first seen on Janu-

*Read before the Warwick County Medical Society, February 25, 1929.

ary 17, 1929, complaining of painful swelling of right foot, where there was a small infected area arising from a split between the fourth and fifth toes. At this time the patient did not mention the fact that her tongue and gums were giving her discomfort. The following day, however, examination of her mouth revealed three ulcerated necrosing areas on her tongue, and one small ulceration on the gum just below the first lower lateral incisor. Her temperature at this time was 101° F. Local treatment for the infected foot was instituted and it cleared up rapidly and completely.

Because of the severity of the ulcerations in her mouth, she was sent to the hospital on January 21, 1929. Upon admission her temperature was 99.5, pulse 100, respiration 18. Physical examination upon admission revealed a normally developed white woman, who did not look acutely ill. No abnormality of the skull was noted, and there were no petechial spots on the mucous membranes or skin.

The lips were cracked and dry. Four ulcers about ¼ cm. in diameter, well circumscribed, were noted on the lateral borders of the tongue. The breath was foul. One small ulceration of the gum just below the first lower lateral incisor was noted. The teeth were in good repair. The eyes reacted normally to light and accommodation, and the ocular movements were good. The thyroid was not enlarged. The anterior and posterior chain of cervical lymph nodes were slightly enlarged. The thorax revealed no abnormalities.

Examination of the lungs revealed normal breath sounds, with no alteration of percussion note; vocal and tactile fremitus were normal and no adventitious sounds were heard. Upon examination of the cardiac area, no shocks or thrills were made out, no increase in size disclosed, and the sounds were clear and normal, with no murmurs. The pulse was 100, regular in force and rhythm. Blood pressure was 130/98. The abdomen was not rigid, and the liver and kidneys were not palpable. The lower edge of the spleen was palpable below the rib margin, but was not tender.

The extremities were normal, except for the split between the fourth and fifth toes of the right foot. That was not painful, and had no redness or swelling at the time. (The infection described in the history had subsided under local treatment, and was not in evidence.)

Laboratory Reports

Urinalysis:

January 22nd.—Voided specimens; amber, clear, and spec. grav. 1.020. Albumin, a trace; sugar negative. Microscopic—Few white cells, many epithelial cells, rare hyaline casts.

January 30th.—Amber, acid; albumin, a trace; sugar negative. Microscopical—Many white cells, many epithelial cells, many hyaline and granular casts.

Blood:

January 23:	
White blood cells	3,200
Red blood cells	3,440
Haemoglobin	60%
Differential:	
Polymorphonuclear	0
Small lymph.	8,690
Large lymph.	1,470

A few lymphocytes with large basic staining nuclei seen.

January 27th.—After transfusion—

White cells	2,400
Differential:	
Polymorphonuclear	0
Small lymphs.	88%
Large lymphs.	12%

An occasional lymphocyte which appeared to be a degenerating type was seen.

January 30th.—After transfusion—

White cells	800
Differential:	
Polymorphonuclear	0
Small lymph.	85%
Large lymph.	15%

Blood Culture: Taken January 23rd, negative after eight days' culture.

Culture: (From smears from ulcers in mouth.) Staphylococcus, streptococcus, hemolyticus, and pneumococcus. No organisms of Vincent's angina seen. Blood Type II—Wassermann and Kahn negative.

Progress of Case

After entrance to the hospital, the patient grew steadily worse. The temperature ranged from 99.5 to 106. The average daily temperatrue was 102.5. The pulse was rapid during most of the illness.

On January 26th, at noon, 500 c.c. of citrated blood was given by the indirect method, and

a stimulating dose of X-ray therapy was given over the femur and tibia.

On January 27th, 20 c.c. of polyvalent antistreptococcus serum was given intramuscularly.

On January 28th, a stimulating dose of X-ray therapy was given over the long bones of the upper extremity and thorax.

On January 29th, a transfusion of 500 c.c. of citrated blood was given by the indirect method.

None of these means of therapy yielded any encouraging results. The white count dropped steadily. The care of the patient's mouth was put in the hands of Dr. Morgan, the staff dentist, and local cauterization of the ulcers and mouth washes were employed. This treatment kept the patient's mouth comfortable. Local application of arsphenamine was also used.

On January 27th, ulcerations similar to those in the mouth appeared on the wall of the pharynx, two in number. On the evening of January 28th, the patient's temperature rose to 104, and during the night she began to develop a cough. Examination of the chest on January 29th revealed the presence of many moist rales throughout the entire chest.

On January 30th, the temperature remained between 103 and 104. During the day the cough grew worse, breathing became dyspneic. At 6:00 P. M. the temperature was 106, and at 8:00 P. M. the patient died.

An autopsy could not be obtained.

Comment

The presence of the infected foot at the onset of the disease suggests the possibility of a septicemia, but the blood picture, the early and complete clearing up of the local infection and the absence of growth on the blood culture, I feel rules out this condition as a causative factor.

The response of the ulcers in the mouth and throat to the local treatment instituted by Dr. Morgan, the staff dentist, was gratifying. The patient got considerable relief from the oral pain after use of cauterization to the ulcers and the constant use of mouth washes.

The rapid progress of the terminal bronchopneumonia shows only too well the low level to which the resistance sinks in the terminal stages of this disease.

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ETIOLOGY AND SYMPTOMATOLOGY OF ANGINA PECTORIS.*

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The etiology is the most obscure of things known of angina pectoris. Huchard has enumerated sixty-four theories as to the causation of this dreadful disease. More recently the numbers, the theories and explanations, have mounted until a later enumerator has counted eighty-two theories to account for this condition. None of these theories completely explains it. In fact, it almost seems that every individual who writes seriously on this condition has some particular theory, or variation of existing theories, to explain the condition of angina pectoris.

Some of the facts that would seem to be easily soluble are still in dispute. As an example, Vaquez[2] states that heredity is an important factor; and Merkland[3] is convinced that this is so. On the other hand, Stolkind[4] states that it is not a hereditary disease.

The first essential for a discussion of the etiology of this condition must be a clear definition of it. The definition as taken from Osler[5] is "an agonizing pain in the region of the heart, radiating to the left arm or shoulder, or neck, accompanied at times with a sense of impending death." There are certain pathological changes that are found sometimes in cases that have suffered the terrific pain of angina; and these changes were thought early in the history of angina pectoris to be the cause of the condition. I am speaking of coronary sclerosis. However, definite information has been piled up in the pathology of the condition, and this information is that coronary sclerosis may exist in exaggerated form without any pain being present.

Some of the statistics may be of interest in this connection. Lambert[6] reports, in 1924, total deaths in New York City—71,252. Of these, 15,826, or 22 per cent, were due to some form of heart disease; 410 deaths, or 2½ per

*Read as a part of the symposium on Angina Pectoris before the Southwestern Virginia Medical Society, at Pulaski, Va., March 25-26, 1929.

cent. were due to angina pectoris. Levine,[7] in a study of 103 cases of angina pectoris, gives the average age as 54.1 years for males, 54.3 in the females, or 54.2 years; 7.4 per cent of this series showed syphilis as an etiological factor. The most common finding was arteriosclerosis.

Some of the pathological findings that account for the pains in angina pectoris in certain cases are: an aortitis with plaques at the base of the aorta; atheroma of the aorta; syphilitic aortitis; occlusion of the mouth of the coronary arteries; coronary occlusion; sclerosis of the coronary arteries; atheroma of the coronary arteries; aneurysm of the pulmonary artery; infarction of the heart; rupture of the heart; adherent pericardium. These various pathological findings occur, and each of them have advocates who claim they are the etiological factors in angina pectoris; and yet the complex syndrome, known as angina pectoris, is not dependent upon anyone of these facts, nor any combination of these facts and findings, so far as is known.

Some have explained the syndrome as a sclerosis of the coronaries plus claudication of the coronary arteries. However, no proof has been forthcoming that there is such a thing as claudication of the coronary arteries.

Allbutt[9] states that the syndrome is due to aortic disease in which there is irritation of the nerve end plates in the first part of the aorta by attacks of aortitis. Mackenzie[10] explains it on the hypothesis of myocardial fatigue. Vaquez, Balfour and Albrecht claim it is due to a pathological dilatation of the ventricular muscle. Keefer and Resnik[11] explain the syndrome as anoxemia of the myocardium. Stolkind[4] explains it as due to three factors: one, a clinical and toxic substance in the blood; two, a state of nervous system; three, a condition of the heart and aorta. Moschowitz[12] reports a case of angina caused by tobacco smoking. Shaw[13] explains the angina as due to a nervous lesion, located in the region of the lower cervical or upper dorsal cord, the associated ganglia or their connections, exciting secondary pathological changes in the cardio-aortic region. Danielopolu[14] believes that the starting point in angina is in the myocardium; or, more precisely, at the left side of the heart; and suggests that the process is analogous to that which is concerned in the fatigue of voluntary muscles. In other words, an inadequate blood supply to the left side of the heart. About the only common idea to all of these theories is that pain is present in angina pectoris. There is slight agreement in the mechanism of the pain. Up until a few years ago the attention of workers had been directed mainly as to the pathological condition of the heart in angina pectoris. Jonnesco practiced extirpation of the ganglia at the base of the neck for relief of pain in angina pectoris. Since this, more attention has been directed toward the nervous factors which produce the pain. Lambert[15] states that "cardiac pain of all intensities, from the transitory uneasiness in the precordium to the most intense agony suffered in angina, can only be explained by irritation or pathological stimulation of the sensory nerves or nerve endings of the heart and aorta. Neither muscle fibers, nor connected tissue nor blood vessels can transmit the sensation of pain, *except* through their sensory nerve supply. Neither spasm nor cramp of certain of these tissues, nor yet fatigue, exhaustion, nor the clinical products resulting therefrom, unless these latter, acting from the sensory nerve endings, can explain pain which is produced only in sensory nerves. Neither spasm nor claudication of blood vessels produces pain, except as they cause pressure on sensory nerves and their endings; or sudden deprivation of the blood supply. The pressure on sensory nerves or their endings from any cause, or the sudden deprivation of blood supply cause all gradations of pain anywhere in the body; and one does not have to go outside of these processes to explain cardiac pain and Heberden's angina.

"Clinically, cardiac pain occurs with those pathological lesions which produce an increase of scar tissue, or sudden diminution or cessation of blood supply in the tissues of the myocardium and aorta. Acute myocardial inflammation and acute endocardial infection do not give pain. Pain does not accompany the cardiac irregularities, either with toxic extrasystole or the degenerative processes, producing auricular flutter or fibrillation, or heart block or bundle block."

It is necessary here to review briefly the nerve paths to the heart. It must be remembered that the efferent nerves are stimulated at their end-organs in the central nervous system; and the impulse is carried to the peri-

phery. The exact contrary is the case in the afferent nerves in which the end-organ is in the periphery, and the impulse arising therefrom is conducted to the central nervous system. One nerve and one nerve fiber cannot carry both afferent and efferent impulses. In other words, efferent impulses flow from the central nervous system to the periphery, while in afferent nerves the impulses flow from the periphery to the central nervous system. The application of this to the problem of angina pectoris is that stimulation of the end-organ of afferent nerves conducts impulses to the brain which are registered as pain; and that successful section of nerves carrying these impulses results in a relief of the pain.

The nerve supply to the heart comes from three sympathetic nerves and the cardiac branch of the vagus. There is a great deal of variation in the nerve supply to the heart. There is a plexus of ganglia about the base of the aorta and the deep cardiac plexus, the network of nerves and nerve fibers joining these ganglia and nerves. There are anastomoses between the superior and inferior cardiac branch of the vagus, the superior cardiac nerve, and the middle cardiac nerve. The middle cardiac nerve arises from the inferior cervical and first thoracic ganglia, all of these fibers and nerves making a maze of complexity.

The definite things known are a heterogeneous assortment. The oustanding facts are: 1. An agonizing pain that may produce death; 2. No specific pathological lesion of angina pectoris is found in the heart; 3. The pain is relieved by the nitrites; 4. The pain is relieved by section of the afferent nerve from the heart. These various considerations lead one to wonder whether or not angina pectoris is to be considered as a heart disease. The problems of angina pectoris are peculiarly unfitted for animal experimentation. However, certain facts have been discovered during operations upon human beings, and this information is most important in explaining the factors which enter into the production of the terrific pain. It will be remembered that Francois Frank,[16] in 1899, proposed section of the cervico-thoraco sympathetic in cases of angina pectoris. His suggestion has only been acted upon since 1916 by Jonnesco. Later than this, Leriche[17] reports certain information of pain during operation in the case of a man under local anesthesia induced for sympathectomy. The anesthetic had not been given deeply enough to affect the sympathetic nerve. Subsequent electric stimulation of the left stellate ganglion caused intense pain and oppression in the precordial region, and in the first two or three intercostal spaces. The patient had never had attacks of angina pectoris. The pain subsided at once after injection of novocaine into the same ganglion. In two other cases an electric current applied to the upper part of the left thoracic ganglion caused sharp pain in the corresponding arm. Applied to the lower part of the ganglion, it caused pain in the region of the heart. A similar but less pronounced pain appeared on squeezing the ganglion. An attack of angina pectoris occurred in a woman during sympathectomy performed for angina pectoris; the paroxysm ceased immediately after an injection of novocaine in the left inferior cervical ganglion, although the rami communicantes had not been severed.

The information of this nature that we have indicates that, whatever the pathological condition in the heart may be, the pain production is intimately associated with the sympathetic nervous system. The co-ordination of reflexes of the circulation is a very complex affair. These reflexes provide for a change of heart rate, regulation of the volume of cardiac output, pressure changes, vasomotor phenomena of tonus of vessels and heart, of respiratory change, as also of chemical, toxic and biologic blood conditions, and the effect of emotion and mental state upon these things. Furthermore, these things are complicated by various types of pathologic lesions in the body and pathological cardiac lesions that occur and modify all of these reflexes. Since we know that in diseased hearts with an identical pathological lseion, pain may occur in some and not in others, we may be thoroughly logical in concluding that the production of pain is outside of the heart. Again, since pain may be produced by certain procedures on the left stellate ganglion, and relieved by anesthetizing it, one infers that the lesion of angina pectoris is in the autonomic nervous system, and particularly in the ganglia concerned in receiving the afferent impulses from the heart.

This idea has been expressed by Shaw,[13] and he has performed certain experiments which tend to strengthen the hypothesis. Experimenting upon rabbits, he produced an irritative le-

sion of the nerves in the enck, subjecting them to a chronic irritation. After a certain length of time the irritation thus set up produced certain degenerative changes, and atheromatous changes in the aorta and heart.

There are some physiological facts that have been discovered and which are related to the attacks of angina pectoris. Most of the cases seem to show a slight increase in the systolic blood pressure, though cases are reported in which the opposite occurred. There are observations reported by Danielopolu[14] in which the plethysmographic tracings of the volume of the arms were made during an attack of angina pectoris. These tracings showed an increase in the volume of the arm, which means a peripheral dilatation. Feil and Siegel[18] have reported electrocardiographic tracings of individuals during an attack of angina pectoris. They have also, on these cases had electrocardiographic tracings immediately before the attack, and tracings after the attack of pain had subsided. In the instances reported, these are very instructive. The T-wave of the electrocardiogram in the second and third leads becomes wholly inverted during the attack of cardiac pain, the inversion of these waves gradually resuming their normal contour after the attack had subsided. The negativity of the T-wave indicates a sudden dilatation of the heart during the paroxysm. Information regarding the dilatation of the heart during attacks of angina pectoris is given by Vaquez[2] and by Merkland. These observers have noted by fluoroscopic examinations of the heart immediately after a paroxysm of angina pectoris that the diameters of the heart were increased, and especially was there a dilatation of the left ventricle and the aorta. The further observation was made that after the attack had subsided and the symptoms of angina had disappeared by the proper procedures, the heart resumed more nearly its normal size. Observations of this nature from such outstanding men are facts that cannot be lightly dismissed. How, then, are we to explain the repeated attacks of angina that are known to occur? Vaquez illustrates the phenomena by stating that the permanent dilatation of the bladder that follows disease of the prostate does not provoke pain, but sudden distention of the bladder causes acute distress. "Distention is produced wherever a hollow organ, bladder or heart, is momentarily incapable of adapting itself to excessive work; and this is the only form that is attended by conscious reaction. We can understand, therefore, why the left ventricle, as well as the aorta, surprised by sudden spasm of hypertension, becomes over distended and that the resulting excitation of the nerve filaments of the myocardium, transmitted to the cardiac plexus, creates a faithful likeness of the angina syndrome." In other words, Vaquez states that there is a sudden spasm first, which produces distention of the aorta, and the distention of the aorta initiates a reflex which permits an acute dilatation of the heart.

In the production of pain by dilatation of the heart, the one essential is that the dilatation occur suddenly. We know, however, that all dilatations do not present the pain of angina pectoris; so there must be some variable introduced into the mechanism of the pain production of angina pectoris to explain the fact that pain is present sometimes, and absent at times. The factor must be the autonomic nervous system; if we combine Shaw's hypothesis and that of Vaquez, we will then have an hypothesis which will explain the mechanism of heart pain, whether it occurs in those cases with a definite disease of the heart and presenting the pathological lesions that have been variously described, or the production of cardiac pain of the anginal syndrome that is known to occur where no demonstrable pathological lesion exists in the heart, aorta or coronaries. To restate these things succinctly, Vaquez's opinion is that angina pectoris is produced by sudden dilatation of the heart; Shaw states that angina pectoris is due to a nervous lesion, located in the region of the lower cervical or upper dorsal cord of the associating ganglia, or their connections.

It must be borne in mind that information obtained in the study of angina pectoris is from patients presenting all degrees of disease and of practically all ages. If the term, angina pectoris, is accepted loosely, we must include as etiological factors in the picture of angina pectoris the pathological conditions that have been described in these cases. If we accept the term strictly, then we must know that there is no definite pathological picture that has been demonstrated as the causative or etiological factor of angina pectoris.

Symptomatology

The symptomatology of angina pectoris has

been described many times, the first accurate description being by Heberden; yet, the seriousness with which we all look upon angina pectoris leaves interest in it, however often we discuss it. How can one describe pain to portray what one sees in attending a patient suffering with angina pectoris? The pain is of such intensity that life and death become of secondary import; and the fear of impending death, so often spoken of, is really the fear of unbearable pain. The attack comes suddenly, breathing is suspended, the hand placed over the heart, he is stopped immobile with face like death, pale and solemn, as if awaiting the judgment of God. There is no twitching or writhing; no energy, however slight, can be wasted; the issue of life or death is in a delicate balance, and the outcome cannot be foretold.

One hears more of the fear of death in the neurasthenic patient with palpitation of the heart than in a patient suffering with angina pectoris. Kahn[19] has attempted to describe certain prodromal symptoms of angina pectoris, and has followed cases for periods of months to two years later after such prodromal symptoms presented themselves; and these he describes as the fore-runners of angina. These prodromal symptoms are darkness before the eyes, falling sensations, loss of consciousness, sudden weakness, faintness, burning over the manubrium. However, all of these things may occur in various individuals with very slight derangement to the circulatory system; and, certainly, they would appear to be no more prodromal of angina pectoris than of any myocardial disease.

The pain in angina is lancinating in character, usually on the left side of the chest above the sternum, or over the xiphoid. It may begin deep in the chest, as substernal; it radiates up to the arm and shoulder, and down the left arm on the inside to the elbow or wrist, and to the ring and little fingers. Sometimes it begins in the front and goes through the chest with burning sensation to the back, or up to the shoulder and down the arm; or, at times, it seems to occupy the whole chest and to radiate down both arms. The pain may go up into the neck, throat, under the jaws and extend to the area behind the ears, and even radiate into the jaws or to the top of the head. Occasionally, the pain is only localized in the wrist; or it may remain as an intense pain in the chest and not radiate into the arm. In some patients the pain radiates down into the epigastric region; or, beginning in the back, radiating forward into the intercostal nerves. In a case of total inversion of the viscera with angina, pain radiated to the right side.

The pain of angina pectoris is definitely related to exertion, to the intake of food and to mental excitement. The duration of pain may be for a few minutes, or it may last for days as a status anginosis.

At the end of an attack of angina, there may be soreness in the left thorax so severe that it is impossible to percuss the border of the heart. Hyperesthesia may become troublesome. Sometimes there is unilateral sweating, or a profuse flow of saliva; very often following an attack, or late in an attack of angina, the patient passes a large quantity of pale urine. Numbness may be complained of in the hand or wrist, or inner side of the arm; there may be numbness of the lips; together with dryness of the roof of the mouth. Sometimes the patient will break into a profuse perspiration. A good many times there is considerable fulness of the stomach with belching of gas or the attempt at belching. Occasionally vomiting occurs. Very often a sense of constriction of the chest or under the sternum is complained of more than the pain.

Dyspnea is not a part of the characteristic features of angina, that is to say, during the attack of pain the patient does not labor for breath. A little later in the attack he may have edema of the lungs and expectorate salmon-colored sputum. In a great many cases the pulse remains normal and the heart does not quicken its rate. Sometimes in the most intense attacks, the heart beats quietly until just before death when it suddenly becomes arrhythmic.

Swelling of the hands has been described by patients, but is a subjective sensation rather than a true edema. Frequently a diffuse redness of the hands and forearms accompanies the attack. Cases have been described in which the redness invaded the chest and face. Not all patients assume a characteristic pose during the attack. Some prefer standing; others remain as they were when the attack started. Some patients complain bitterly on being required to lie down during the attack. This may occur at the very beginning of the

attack, or at any time later. Sometimes the first attack kills the patient; at other times he lives for months or years; and he may die by syncope at the height of pain, or during recrudescence, following a period of relief. Death may be painless after repeated agonizing attacks. They usually succumb without a cry. The effort the patient makes to prevent the attacks of pain are rarely successful. It seems that the more often they have attacks of pain the more susceptible they become. Usually a patient with this condition sleeps quietly, and may be troubled at times with disturbing dreams.

Angina pectoris is the one disease that is diagnosed most accurately from the symptomatology it presents.

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THE DIAGNOSIS OF ANGINA PECTORIS.*

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Unlike most diseases, angina pectoris does not respond to any of the ordinary diagnostic procedures. Clinical laboratory, X-ray, electrocardiographic and auscultatory methods are indefinite if not entirely useless in its diagnosis. It is essentially a condition whose recognition rests on a group of symptoms, mostly subjective, rather than on any of our instruments and methods of accuracy and precision.

A consideration of the morbid anatomy is of interest. There are no characteristic gross or microscopic changes except atheromatous patches in the aorta. The relation of these patches to the disease is not clearly understood. The location of pain is usually limited to the region supplied by those segments of the spinal cord which receive impulses from the heart—third cervical to third dorsal—although it is sometimes noted elsewhere.

The cause is probably based on some functional disturbance. Numerous theories have been advanced, but that of Reid seems to the writer to explain it better than any other; ordinarily during exercise, there is a dilatation of the peripheral vessels, thus drawing the blood away from the heart. According to Reid, angina pectoris may be due to failure of the peripheral vessels to dilate, thus causing a sudden rise of pressure in the first part of the aorta and the left ventricle. This would also explain the beneficial action of the nitrites.

Certain general observations may be made regarding angina pectoris. It occurs very much more frequently in men than in women; in white than in colored persons; and in elderly persons. It is rapidly increasing. (cf. Tables 1, 2 and 3.)

TABLE 1.

Death Rate from Angina Pectoris in Virginia per 100,000.

Year	White	Colored	Total
1923	11.24	6.16	9.34
1924	11.03	8.00	10.14
1925	11.96	8.56	10.94
1926	12.64	8.88	11.51
1927	13.78	11.13	13.04

TABLE 2.

Deaths Due to Angina Pectoris.
(Metropolitan Life Insurance Co.)

Year	Per cent
1916	3.60
Prior to 1927	2.95
1927	5.80

TABLE 3.

Death Rate per 100,000 *from Angina Pectoris.*
(Metropolitan Life Insurance Co.)

Age	1923	1924	1925	1926	1927
35-44	5.0	5.7	5.8	7.4	6.7
45-54	14.5	13.5	16.2	20.7	20.6
55-64	32.6	31.7	38.8	47.0	52.3
65-74	71.0	70.1	74.2	96.0	95.8
75 & over	94.2	89.5	152.6	152.8	118.4

*Read as a part of the Symposium on Angina Pectoris, before the Southwestern Virginia Medical Society, at Pulaski, Va., March 25-26, 1929.

Pain is excruciatingly severe, vise-like in type. The patient has a feeling of oppression and of impending disaster. The attack is usually transient, generally terminating spontaneously in death or recovery within an hour, if cycles of suffering can be reckoned by the clock. The pain is usually relieved by the vasodilators. The pain is usually described as being most severe in the substernal region, radiating to the left shoulder and down the left arm; it may, however, be noted elsewhere, particularly in the epigastrium and sometimes even in the lower abdomen. The diagnosis between angina pectoris and disease of the abdominal viscera is based on the fact that in angina pectoris, abdominal in type, there is no marked alteration in the blood count and no localized point of tenderness and rigidity—just general pain. The psychic symptoms of anxiety and fear are usually much greater than in abdominal disease.

It is important to differentiate angina pectoris from coronary occlusion. In coronary occlusion the pain is not relieved by nitrites, is of longer duration, often lasting for hours or days, and is accompanied by shock and slight leucocytosis.

To summarize: Angina pectoris is a symptom-complex based on clinical rather than on anatomical or physiological findings. The symptoms may vary considerably according to the stoicism of the individual and the part of the body to which the pain is referred, but the pain is almost invariably accompanied by a characteristic feeling of tremendous apprehension and approaching death, and is always serious.

THE TREATMENT OF ANGINA PECTORIS.*

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A discussion of the treatment of angina pectoris must of necessity be based upon one's conception of the entity of the disease. The literal meaning of the term as applied by Heberden "Strangling in the chest," perhaps cannot be improved upon if one insist that it be applied only to the typical paroxysmal type of angina; for the paroxysmal type is a veritable epileptic like storm, sweeping over the organs of circulation, centering in the chest and distributed to the lower cervical and upper dorsal nerves.

As a means to the end of a practical discussion of treatment, the modern definition of "Pain or equivalent discomfort in certain nerve distributions supposedly originating in the heart or aorta,"[1] will here be accepted. Likewise will we accept in substance Mackenzie's working hypothesis that cardiac pain is an outcry of a heart muscle whose blood supply is not equal to the demand; the inadequate supply being due to either disease, or functional or exhaustion, or both; an outcry exactly similar to that of any other muscle driven to near the limit of its capacity to work, producing a syndrome not inaptly compared by Osler to that of intermittent claudication.

A word as to the prophylaxis of this symptom-complex which each year is now growing more prevalent. Granting that an individual before birth might shape his own destiny and make a choice, then; after selecting, as his ancestors, those whose building material afforded best quality of tubing for his organs of circulation, he should choose to be a woman and not a man, for comparatively few women die of angina pectoris. He should choose to be mediocre, and not intellectual, for it is rare that an unintelligent individual is affected. He should choose to live in the country and not in the city, for it is far more prevalent among city dwellers. He should choose not to have syphilis, for practically all under forty years of age who suffer from the true paroxysmal type are said to be thus infected. He should choose not to be a physician, for one out of every twenty of our profession dies of the disease.

It can in truth be said that in no other disorder is it more important to treat the patient rather than the disease; and likewise, in planning treatment, to determine in so far as one may, whether the patient affected have cardiac pathology, or whether the heart be comparatively normal, but exhausted, from such various causes as obesity, toxaemia, anaemia, physical or mental strain, overwork, or loss of sleep; likewise, whether or not the endocrines are at fault.

In approaching directly the treatment of the severer types of the disease, what of drugs? All are agreed that those who have once had an attack should always carry pearls of amyl nitrite, to be crushed and inhaled, or, what

*Read as part of Symposium on Angina Pectoris, before the meeting of the Southwestern Virginia Medical Society, at Pulaski, Va., March 25-26, 1929.

others hold to be almost equally potent, tablets of nitroglycerine, not to be swallowed, but to be allowed to dissolve under the tongue. Next in order comes the drug which of all has the field of greatest usefulness in treatment of pain, morphine; but in what dosage? I know of no condition in which there is a greater temptation to give large doses of morphine in quick succession than in angina pectoris. This is particularly true in that the call to the patient is always hurried and too often no other anodyne is at hand to alleviate the suffering approximating the limit of endurance. Allbutt insists that a full dosage of atropine be given with morphine, upon the theory that the vagus is an important factor in the mechanism of the paroxysm.

Indelibly burned into my memory is the picture of the first individual whom it was my misfortune to lose with the disease—a lawyer of considerable prominence and influence in his community, but of convivial habits, who lived well but not wisely, and whom I had treated through other attacks. His suffering was so intense it seemed necessary to give him in succession three doses of a quarter grain each of morphine, and when finally relieved he was accompanied home and left in bed apparently recovered. Responding to a hurried call later he was found cyanotic and dying. The morphine probably was not responsible for the death, for indeed I am not now so sure that it may not have been a case of coronary occlusion, the diagnosis of which catastrophe then lay in the realms of the future, but the experience was not conducive to sound sleep upon my part the night following.

What of chloroform? While it is tabooed in practically all other heart conditions, it has the sanction of good authority in angina, and in the light of the above experience my own feeling is that after the use of a half grain of morphine without relief, chloroform carefully administered in small quantities is a real boon while waiting the full effect of morphine, and that it should be given without hesitation.

Following an attack of severe angina it must of necessity be decided whether it be advisable to put a patient to bed for the period of from four to six weeks, as is advocated by some. Allbutt in particular has stressed the advantages of a prolonged rest in bed, in the open air by preference, after the manner of the treatment of tubercular patients. In favor of this plan of treatment is the fact that it gives the physician an opportunity to study his patient carefully, and to inculcate in him the importance of a proper adjustment of his life so as to minimize cardiac strain in such cases as show definite pathology. It should, however, be borne in mind that old people do not do well as a rule if kept in bed over long periods. At once in this connection the question also arises as to whether the heart be compensated or not, and further what the effect of confinement will be upon the spirits and morale of the individual affected. Every observant practitioner knows full well how greatly the threshold of pain varies in different patients, and too, how greatly it varies from time to time in the same individual, which means, as Mackenzie has said,[2] "That the severity of the pain is no guide to the gravity of the lesion, and that the treatment directed to the nervous system may be of far more benefit than that directed to the cardiac lesion."

What of the treatment of the milder attacks and between the paroxyms of the severe attacks? Likewise, what are the best sedatives tending to lessen the discomfort, and to make the period of confinement, if the patient be restricted to the house or bed, less irksome? The value of good nursing, massage, and a diet best suited to the individual goes without saying. As to drugs, it is doubtful if Mackenzie's routine of bromides, 10 to 30 grains, with or without chloral, 3 to 6 grains, given at regular sufficiently frequent intervals to produce slight drowsiness, if necessary, four to eight hour intervals, can be improved upon. Less objectionable to most patients, certainly than that of the bromide of ammonia, which was Mackenzie's favorite, is the use of adalin, 3 to 5 grains, with or without luminal in one-eighth to one-quarter grain doses, given three times daily, fortified at bedtime if need be by trional, a favorite of Meara, in from 5 to 15 grain doses, or by small doses, gr. 1½ to gr. 3 of the newer barbital derivatives, such as neonal, amytal or dial, to which codeine may be added if necessary.

I have the impression that the good effect of the bromides is in no small degree due to their action as a mental and nerve sedative and would therefore caution against the protracted use of large doses, as well as against

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the use of large doses of barbital derivatives on account of their depressing effect on the circulation and particularly on the spirits. To the contrary, I have seen nothing but good results from the long continued use of small dosages of from 5 to 8 grains of bromide three times daily. This I have observed to be particularly true in such cases as are complicated by hypertension.

In this connection I especially wish to call attention to what is apparently the greatest advance made in recent years in the treatment of such cases as are due to sclerosis of the coronary arteries. I refer to the experiments, clinical and laboratory, which have led to the increasing use of drugs of the xanthin group, the more important of which is theophyllen, better known as theocin, and theophyllene ethylendiamine the trade name of which is euphyllin.

Of the group, the latter, euphyllin, has proved itself the more useful, in that it is better borne by the stomach and causes less systemic disturbance. It has definitely been shown by animal experimentation that it has the property of increasing the flow of blood in the coronary arteries from 40 to 90 per cent.[3] If one may rely upon the flattering reports from a number of cardiac clinics in which it has now been tried out from one to three years, he must conclude that it is well worthy of consideration. There are apparently no contraindications, and it may be used over long periods, either alone or with digitalis or other similar drugs. The dosage which has been found most acceptable is one and a half to three grains, three times daily. I have not personally had an opportunity to use it in a sufficient number of cases to express a definite opinion further than to say that I believe that every patient of the arteriosclerotic class should have the benefit of a trial of the drug over a considerable period of time.

In contrast to the typical paroxysmal type of angina, which fortunately the average practitioner sees at somewhat infrequent intervals, is that borderland, mongrel type of cardiac pain, the severity of which runs the gamut from the slight discomfort of the neurotic individual, often due to purely functional causes, to that of the constant nagging, burning, substernal pain so characteristic of true coronary or aortic disease—all too often the forerunner of the severest angina. These types are referred to by most authors in somewhat slighting terms, such as the pseudo-angina of Osler, mock or minor angina of Allbutt, secondary angina of Mackenzie; yet for the general practitioner they constitute no small part of the day's work, and, regardless of whether the origin of the pain be functional or pathological, it is nevertheless very real to the patient, and the basis of treatment, looking to permanent relief, is in many respects the same as of true angina. The intelligent practitioner need not be warned to avoid the use of the term angina in this type of case, for reasons which are obvious.

I have above referred to Mackenzie's hypothesis that heart pain is in part at least due to the work of the organ being disproportionate to its nutrition. I need not remind you that the heart is the hardeset worked muscle in the body, and that its work continues both night and day, and further that its own blood supply is dependent upon its own labor. Neither is it necessary that I remind you that the heart's nutrition suffers in proportion to the character of blood supplied. Manifestly, therefore, the innumerable things which may tend to vitiate the blood stream, such as focal infections, the poison of tobacco, anaemia, and various systemic diseases of all sorts, should be diligently sought out and removed, with the proviso always that due consideration be given to the shock incident to the removal of focal infections in such patients.

By way of parenthesis, may I not state that there are three sources of crippling of the heart which it seems to me deserve more attention than is usually given them; the focal infection of pyorrhoea, which somehow seems markedly to affect the heart muscle; the strain of grief and domestic worries; the wearing effect of hypertension and consequent need of digitalis in many cases; and too may I not add as a fourth, an often overlooked gall-bladder infection. For, if I remember correctly, it was Riesman who some years ago called attention to the frequency of involvement of the heart muscle in patients having gall-stones. Willius tends to corroborate this observation by his review of proven coronary cases at the Mayo Clinic, in which he states that 26 per cent showed cholecystitis, with or without stones; possibly a coincidence, but doubtless worthy of note.

Of prime importance also is the necessity of a healthy nerve supply, as a driving force to the heart, thereby maintaining a steady normal rhythm, upon which the heart is directly dependent for a constant blood supply. Closely related to this also is the importance of properly regulated exercise for convalescents, and particularly for the large class of patients in whom definite pathology is not evident. It is my observation that proper exercise and recreation for many of this class will work wonders when all medicines fail.

As related to the nutrition of the heart muscle I have under observation at this time two patients in point; the one a woman of asthenic build who on account of a digestive disturbance was advised that her diet must be sharply restricted. She worried much, became emaciated and developed paroxysmal heart pains, which were diagnosed angina. She has been relieved by reassurance, a nutritious diet, and a gradual resumption of a normal routine of life. The other patient is a man of like asthenic build who on account of a moderate elevation of blood pressure was dieted strictly and allowed little or no meat for a year. He too grew emaciated and weak, became alarmed about himself, and developed attacks of cardiac pain which likewise were diagnosed angina, which diagnosis worried him greatly. He too has been similarly relieved by a balanced diet, reassurance and a gradual resumption of his normal activities.

This brings me to one further consideration of what I believe to be of extreme importance in handling patients subject to cardiac pain, and I am done. I refer to the mental attitude of the physician himself as relates to such patients, and his capacity, after having worked and thought out the various angles of the individual case, to reassure the patient in so far as circumstances will permit, and to inspire him with hope, and a willingness "to live on a lower level," if need be, and to adapt himself to such a routine as will enable him to carry on within the limits of his strength and capacity. For those whose hearts are definitely diseased, many of whom are unduly alarmed, as well as for the not inconsiderable number of neurotics whose minds are centered upon their hearts, an intelligent painstaking examination and a frank talk at times works wonders—psychology, if you will, but an exercise of art second to none in the practice of medicine.

A summary of the remedial measures here considered, in their order of merit, would seem to be about as follows:

1. For relief of fulminating attacks of angina, amyl nitrite, nitroglycerine, morphine, and chloroform.

2. For minor attacks, and discomfort between attacks, bromides supplemented, if need be, by chloral, codeine, luminal, and other barbital derivatives.

3. As curative measures between attacks, the elimination of tobacco and other poisons, particularly the judicious handling of focal infections, and proper care of the heart and of complicating disorders, functional and pathological.

4. The study of the individual patient as relates to his nervous system, morale, and readjustment of habits of life.

5. A proper trial of the xanthin group of drugs, particularly euphyllin and theocin in arteriosclerotic cases.

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Shenandoah Life Building.

THE SURGICAL TREATMENT OF ANGINA PECTORIS.*

By D. S. DIVERS, M. D., Pulaski, Va.

In my part in this symposium, I will endeavor to give you the opinion of some of the best men who are thoroughly studying the results, both good and bad, in this most distressing condition.

The surgeon in doing this operation does not hope to cure the patient of a disease of which the etiology is not known, but is trying to relieve him of the agonizing pain that is most unbearable and will ultimately end in death. The attempt at the alleviation of this pain is accomplished by the interruption of the afferent or sensory nervous supply to the heart.

Jonnesco, a Roumanian surgeon, in 1916 succeeded in relieving the pain in a case of angina pectoris by removal of the superior,

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middle and inferior cervical ganglia. This operative procedure had been carried out by him before this time for hyperthyroidism, epilepsy, and glaucoma. Since Jonnesco's adventure in 1916, numerous modifications of this operation have been done.

The following are some of the operations that are advocated by some of the men who appear to be most interested and are studying these cases: the removal of the superior ganglion on the left side; the removal of the cervical ganglion along with the stellate ganglion on one or both sides; by cutting the rami-communicantes which go to the stellate ganglion, cervical trunk above this ganglion, the vertebral nerve and the depressor nerve if present, leaving the ganglia intact. Some are also advocating paravertebral injections of alcohol and novocain. All are claiming good results in a good number of their cases.

The operation is usually carried out on the side in which the pain predominates. Should relief not be obtained, some men advocate the same procedure on the opposite side.

All the sensory impulses coming from the heart and aorta are through the sympathetic nervous system and the afferent fibers of the vagi. From the literature available today, there seems to be a difference of opinion as to the anatomy and physiology of the autonomic nervous system supplying the heart and aorta. The sensory or afferent impulses are supposed to be transmitted from the autonomic nervous system to the cord by the way of the white rami-communicantes. The white rami[1] do not exist in the cervical sympathetic system, only the gray rami, but do exist from the first thoracic to the first lumbar inclusive.

Langley[2] and Ransom,[3] both have shown that the cervical sympathetic nervous system does not contain sensory fibers, but is entirely motor. The stellate ganglion, on the contrary, contains numerous sensory fibers as well as motor. Cutler[4] believes that any sensory fibers reaching the cord from the cervical sympathetic system must come through the middle and inferior cardiac nerves by the way of the corresponding ganglia through the stellate ganglion. Langley has also stated there are sensory fibers connecting the vagus with the superior cervical ganglion. LeRiche and Fontaine,[5] state they "have frequently stimulated the cervical sympathetic electrically in human beings, and so produced pain with a very sharp and limited topography." In the cases in which this was done they state the vagus connections were not interrupted, but the connections with the thoracic sympathetic were divided, showing, according to Langley, that there must be a sensory connection from the vagus to the superior cervical ganglion.

According to the present knowledge available concerning the afferent nerve supply to the heart, one would think all the sensory impulses coming from the heart and aorta to the cord must pass through the stellate ganglion or through the superior cervical ganglion to the sensory fibers of the vagus. From this description it appears a very simple task to relieve a patient from the pain of angina pectoris.

As I have said before, there have been many modifications of Jonnesco's operation. All have given some good results. All have interrupted some of the sensory fibers from the heart and aorta, but none have interrupted all of them, proving that removal of some of the sensory paths will in some cases, where the stimulus is not so great, give relief.

When angina pectoris was placed in the column with other conditions that are relieved by surgery, like many other diseases, it was received favorably by some and condemned by others. Such men as Brown, Coffee, Cutler, LeRiche, Fontaine and many others have proven beyond a doubt that this operation is justifiable in cases of true angina pectoris which have been properly studied by a competent internist.

Cutler collected fifty cases that had been carefully studied before coming to operation with follow up records for six months. In these cases good results were obtained in 54 per cent: improved 16 per cent, no relief 14 per cent, and 8 per cent were questionable. Hesse, after reviewing 135 operations, concludes favorable results are obtainable in 65 per cent, unsatisfactory results in 17 per cent, with a mortality of 13 per cent.

LeRiche and Fontaine believe severe pain occurs in the cervico-facial region in about 25 per cent of the cases following removal of the ganglia. Hyper- and hypoesthesia were present in a good number and also muscular atrophies. Jonnesco[6] since 1896 has removed the cervical ganglia on both sides in 200 cases. Examinations ranging from five to twenty-

four years afterwards have never revealed the slightest unfavorable influence on the heart.

We have in the past been unable to give our patients any encouragement from relief of pain, but now I believe we can safely say to some of them that their chances are 50 per cent to be relieved by surgery. When we can obtain good results in 54 per cent to 65 per cent with a mortality of 8 per cent to 13 per cent, I think we are justified in giving some of them this advice.

Some of the workers advocate early operative treatment in these cases before they become too advanced and too severe, and while the heart can be considered sound. Others advise operation only after all medical remedies have failed, but they all agree, I believe, that no case of angina pectoris with a decompensating heart should be treated by cervical sympathectomy. The decompensating cases can obtain some relief with paravertebral injections of alcohol and novocain.

Both local and general anaesthesia have been used, the local anaesthesia appearing to have the preference. The operative technique has been omitted as it can be found in any modern text book on surgery.

From reviewing the literature one receives the following impressions on the present status of the surgical treatment of angina pectoris:

1. There is no one definite operative procedure that meets the consensus of opinion of the men who are doing most of this work.

2. Every case should be carefully studied by a competent internist before coming to operation. There are a great number of cases that have received a cervical sympathectomy for angina pectoris who had a coronary thrombosis or some other heart condition. These cases did not obtain relief from pain.

3. Cases with decompensating heart should not be subjected to operation, but may be treated by paravertebral injections of alcohol and novocain.

4. Favorable results from relief of pain can be obtained in 50 per cent to 60 per cent of cases in true angina pectoris.

5. The surgical reatment of angina is now in its incipiency and the treatment should be in the hands of surgeons doing neuro-surgery.

In closing, I do not believe I can impress on you the present status of the surgical treatment of angina pectoris any better than to quote Dr. Frank C. Mann, about the distribution and course of the sympathetic nerves. He says: "I would hesitate very much to predict the course of any particular fibers of the sympathetic nervous system in any animal that I had not studied or that had not been studied by a competent observer, and, so far, we know very little as to the course of these fibers in the human being. The patient should be told that the operation is an experiment. The results should be carefully recorded in all cases, in order that we might know more about the physiologic effect of these nerves."

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FIBROUS OBSTRUCTION OF THE BLADDER ORIFICE.

By A. I. DODSON, M. D., Richmond, Va.
From the Department of Urology, St. Elizabeth's Hospital.

Fibrous obstruction of the vesicle orifice gives rise to a clinical syndrome identical with that resulting from hypertrophy of the prostate. The onset of the symptoms is insidious, at first a slight frequency and burning, to be followed gradually by difficulty in starting the stream and a sensation as though urination has not been complete. Untreated, the condition slowly progresses to complete obstruction with the same devastating effects upon the upper urinary system that are found in advanced cases of prostatic enlargement.

On palpation, the prostate may be normal in size, or contracted and indurated, depending upon the degree of its involvement in the fibrous process. The size of the gland may prove an obstacle in diagnosis to those unacquainted with the possibilities of fibrous contraction as the cause of a bladder obstruction. The diagnosis is made with the cystoscope. As the instrument passes into the bladder, it does not ride over a mound as is the case in pros-

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tatic hypertrophy, but fits very tightly at the bladder orifice and there is often a sensation as though the instrument is being grasped. A varying degree of residual urine is encountered, according to the duration of the disease. The bladder mucosa is congested, and the walls of the bladder trabeculated. Frequently, there are minute saccules in the bladder wall, and at times definite diverticula are encountered. The trigone is usually thickened, the inter-ureteric ridge standing out prominently. In fact, at times, the trigone is so much hypertrophied as to become a part of the obstructing process. The bladder sphincter area is definitely thickened, and its mobility is impaired. (Fig. 1.)

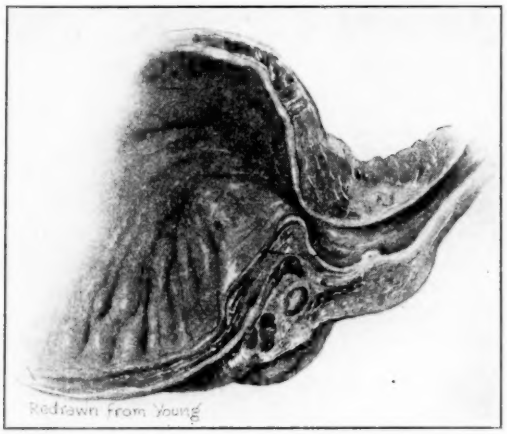

Fig. 1.—Longitudinal section through a portion of the bladder and prostatic area showing a thickening of the trigone, muscle, and the tissues about the bladder orifice.

As the instrument is drawn back into the posterior urethra, a definite barrier of tissue prevents a view of the trigone. (Fig. 2.) The obstruction is quite circular, except when the fibrous tissue is present in greater abundance on one aspect. This is seen when the fibrosis is confined chiefly to the prostatic area and known as median bar. Occasionally, the condition is complicated by a slight degree of prostatic hypertrophy, usually appearing as little nodules about the bladder orifice giving it an irregular appearance. When prostatic hypertrophy is advanced, it may obscure the picture and such cases at times continue to have obstruction, after the prostate has been removed, requiring further treatment. This type of obstruction is the result of chronic inflammation of the bladder, prostate, and posterior urethra. In cases of long standing inflammation of these structures, deposits of fibrous tissue are laid down in the submucosa and muscularis, and as the process advances, contraction of the fibrous tissue takes place interfering with the muscular action and narrowing the orifices of the bladder.

Under the title "A New Procedure (Punch Operation) for Small Prostatic Bars and Contractures of the Prostatic Orifice," Young, of Baltimore, in 1913 presented the first rational method of dealing with this process. The method, in principle, had been described years ago by Mercier. Mercier's instrument was introduced in 1839, many years before the perfection of the cystoscope, and the failure of his method was probably largely due to an improper selection of cases.

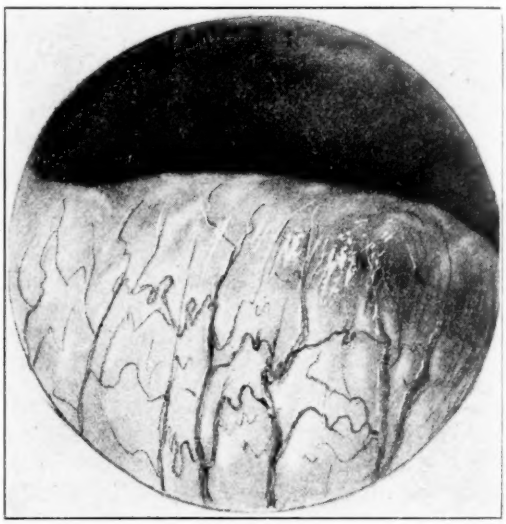

Fig. 2.—Cystoscopic view of a fibrous obstruction or median bar formation in the neck of the bladder. This observation was made with the cystoscope pulled back in the posterior urethra, showing the barrier of tissue between the posterior urethra and the bladder.

More recently, Caulk has introduced a modification of Young's punch in which a cautery blade takes the place of the cutting edge of the inner sheath of Young's instrument. The advantage of Caulk's instrument is the satisfactory control of hemorrhage.

Other methods have been introduced by Chetwood, Bugbee and others, but until recently Young's punch, or some modification of this, has stood out as the method of choice.

C. W. Collings in *The Journal of the American Medical Association of* February 11, 1928, reported fifty-one patients having been re-

lieved from bladder neck obstruction by cutting with high frequency current in the form of the electrotone, a special high frequency apparatus devised by him. The apparatus is similar to the old spark gap machine, but the rate of high frequency oscillation is stepped up, producing a cutting current. Collings uses a McCarthy cystoscope or a modification of the same and an especially devised knife electrode. (Fig. 3.) Since the current cuts instead of cauterizing, thick sloughs or secondary hemorrhage are eliminated. (Figs. 4, 5, and 6.) Primary bleeding is insignificant, and he considers the procedure a more or less minor one, giving relief to cases of purely fibrous obstruction with minimum hospitalization and apparently without grave complications.

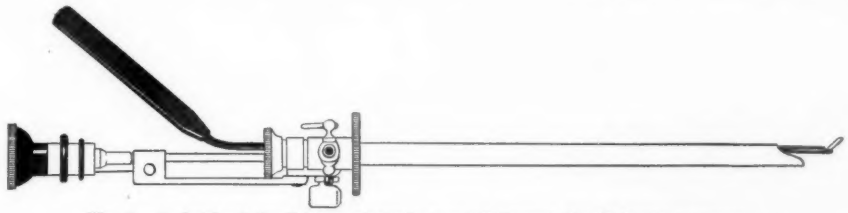

Fig. 3.—A sketch of the Collings electrode inserted through the McCarthy cystoscope.

I have used the Collings method in thirteen cases of fibrous obstruction of the neck of the bladder. I have used the knife electrode devised by Collings, but have secured the current from an Engeln diatherm apparatus, using the surgical knife attachment. There have been no deaths or serious complications in these cases. The youngest patient in this group was forty-five years of age, and the oldest was seventy-three years of age. The average age was sixty-six and one-tenth years. With the exception of two patients, one of whom entered the hospital with complete retention and uremia and the other developed a very severe epididymitis, the average hospital stay was a little less than a week. The amount of residual urine varied from two ounces to complete retention with an average of about eight ounces. In ten patients, the residual was completely relieved, and the patient was symptomatically cured after one operation. One patient who came to the hospital with complete residual had this residual reduced to

Fig. 4.—Same observation as Fig. 2, showing an incision by the cautery knife. After the first incision is made down to the level of the base of the bladder and posterior urethra, as much tissue is shaved off from the margin as is deemed necessary to give satisfactory drainage.

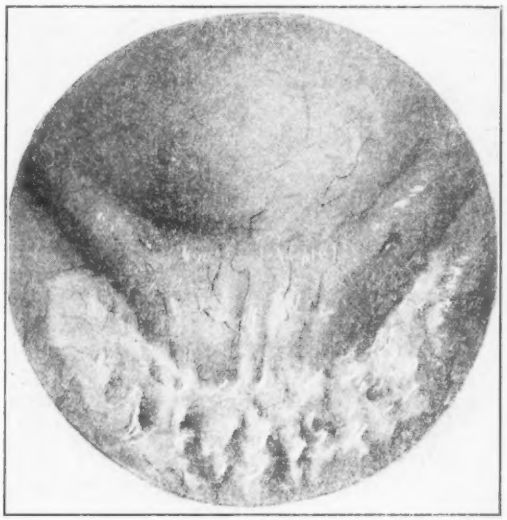

Fig. 5.—Same observation as Fig. 2 and Fig. 4 after the operation has been completed. It may be noted that the posterior urethra and trigone are practically on the same level.

two ounces after the first operation, and was completely relieved after the second. Another patient has been treated too recently to determine the final results. Another who entered with complete retention left the hospital after two weeks with four ounces of residual, and he will return for further treatment.

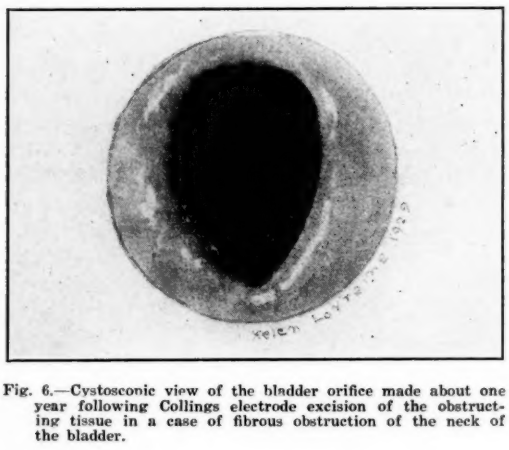

Fig. 6.—Cystosconic view of the bladder orifice made about one year following Collings electrode excision of the obstructing tissue in a case of fibrous obstruction of the neck of the bladder.

My experience with this procedure convinces me that it is the simplest and safest means of dealing with this disease. A very large portion of obstructions of the bladder neck is of this type, and frequently even when it is complicated by minute prostatic nodules, it can be relieved by this simple procedure with the hospitalization of about a week and with practically no mortality.

617 *West Grace Street.*

TECHNIC OF GALL-BLADDER SURGERY —PRE-OPERATIVE, OPERATIVE, AND POST-OPERATIVE.*

By O. T. AMORY, M. D., F. A. C. S., Newport News, Va.

The technic of gall-bladder surgery in general will be determined by the type of case one has under consideration, as, for instance, chronic cholecystitis with, or without, stones; acute cholecystitis with, or without stones; sub-acute cholecystitis with, or without, stones; obstruction by stones, or otherwise, producing sepsis and jaundice. As a general rule, one is safe in removing the gall-bladder except in those cases of acute involvement with jaundice, ascending cholangitis, and especially those cases with enlargement of the head of the pancreas. These cases usually should be drained.

*Read before the Surgical Service of Riverside Hospital.

Pre-Operative Technic

It is generally agreed in the chronic cases, especially with stones, that they should be operative as soon as the correct diagnosis has been made, and the patient should be given the usual preliminary treatment. Otherwise, in the acute cases with infection it is better to tide the patient over until the acute condition subsides, which occurs with the majority of cases under proper pre-operative care.

This treatment usually consists of keeping the patient in bed with sufficient morphine to keep them at ease, with forcing of fluids through every avenue, under digitalis and general supportive therapy, until the acute symptoms subside, which condition is determined by the general involvement of the patient, subsidence of temperature, reduction in the blood count, with a corresponding reduction of the polys and so forth.

Judd advises diathermy, both pre-operative and post-operative. Personally, I have had no experience with this, but realize its advantages.

Jaundice should be combated by transfusions, glucose and soda, calcium, various haemostatic serums, with forced fluids, and general supportive treatment. Special attention should be given these cases from a mental and nervous standpoint, as there is usually a mental symptom-complex manifested by depression and melancholia, with instances bordering on various forms of mania.

Operative Technic

Regardless of one's skill, dexterity, and efficient technic, it is impossible for one to overcome proper position, exposure, and vision. Therefore, the patient should be properly placed on the table, with pads under the back at its costal margin, the feet slightly elevated, and so forth. The incision should be of sufficient length for proper exposure with a proper lighting system. The Cameron lights are excellent in gall-bladder work, especially in searching for stones, for differentiating stones from enlarged glands, and so forth.

There are various incisions recommended, but they are more or less of individual choice. The past year has given very little new in gall-bladder surgery, though volumes have been written on gall-bladder disease. There has been one important thing which has been stressed, and that is anomalies of the gall-bladder tract. All kinds of variations have

been reported, both acquired and congenital, varying from complete absence of the gall-bladder to slight abnormalities of the ducts. This fact should be constantly in the minds of surgeons doing gall-bladder work. Often the little details of one's work determine whether the patient will be relieved by operation of the symptoms complained of or not. One of these details is the proper placement of packs around the operative field before one attempts much manipulation. Frequently, on separating adhesions or other manipulations, one opens up a pocket of pus, gets into a fistula, or may even rupture the gut or gall-bladder proper. So, if the field is properly protected, the minimum amount of danger will be done.

Whittaker, of Rochester, N. Y., and others, recommend the enucleation of the gall-bladder, which has its advantages in certain types of work.

It is a consensus of opinion among the profession that in cases of acute infection with suppuration, one should do a decompression for temporary relief, with a removal of the gall-bladder at a later date. Most of these cases have to be removed later, as the gall-bladder does not function after drainage in about 90 per cent of the cases.

Judd states that 80 per cent of gall-bladder removals should not be drained. In Judd's hands this percentage of cases is usually safe, but it is the author's opinion at the present time that this is a rather dangerous teaching for the average surgeon operating under the average surgical conditions, although admitting that one can frequently leave out drainage more freely than we do. I am unwilling at present to follow the teaching of the ideal cholecystostomy in full.

Judd gives as a definite indication for drainage: (1) Infection, (2) Jaundice, (3) Bleeding.

The control of hemorrhage is absolutely essential, and, with proper exposure and proper vision, one is able to clamp the tissues properly before severing them. I am convinced that there are more operative and post-operative complications caused by the trauma produced to the ducts, tissues, and so forth, in an effort to control hemorrhage than there are produced by the disease itself. I always make it a practice to doubly ligate securely all ducts and vessels, making sure the operative field is entirely dry before leaving it.

As to anesthetic, this is a matter of individual choice. In the aged, poorly nourished, and generally bad risk cases, local anesthesia alone, or local combined with ethylene or gas oxygen are the procedures of choice. Local alone has been very satisfactory in our hands. The author has had no experience with spinal or rectal anesthesia in these cases. If possible, one should avoid ether and chloroform in this type of case.

One should search diligently for stones in all gall-bladder work. The following sites should be explored, as stones are found in these areas:

1. Intra-hepatic ducts.
2. Extra-hepatic ducts.
3. Gastro-intestinal tract.
4. Peritoneal cavity.
5. Gall-bladder.

It must be borne in mind that enlarged and especially calcified glands may be very misleading for stones.

In cases of questionable removal of the gall-bladder, one may remove the gall-bladder and insert a drain in the common duct.

Post-Operative Technic

In the aged, one should get these patients out of bed as quickly as possible. They should be dressed daily to protect the skin; see that tubes drain properly, forcing fluids and the average drain should be removed in five or six days.

Cases of biliary fistula usually mean that stones have been overlooked or some damage has been done to the ducts. In cases of gall-bladder disease, if correctly diagnosed, with proper pre-operative, careful operative, and efficient post-operative care, one should expect good results of gall-bladder surgery.

THE PREVENTION OF SYPHILIS IN VIRGINIA.*

By C. B. RANSONE, M. D., Roanoke, Va.
Health Officer of Roanoke and President Virginia Public Health Association.

In speaking of the unpleasantness between the states, one of our southern writers very beautifully said: "The early spring of 1861 brought to bloom, besides innumerable violets and jassamines a strange and enormous flower —a flower whose shadow chilled a people; whose odor strangled a nation; whose petals drooped downward and whose roots were in

*Presidential address at annual meeting of the Virginia Public Health Association, at Richmond, Va., February 20, 1929.

hell. This was the blood-red flower of war." In the early summer of 1914, in a fertile and carefully prepared soil, this same flower sprang up in Central Europe and by the spring of 1917, its chilling shadow had gradually spread to the shores of our own continent. The struggle was on to make "the world safe for democracy." This shadow has lifted and under a clear sky we are now able to take stock of the things accomplished. When we observe the position which this nation occupies in the eyes of the world by reason of its failure to become a member of the League of Nations; because of the jealousy and animosity of the dominant party; when we hear in the distance the rumblings of inevitable war in many places and as we smile at the most recent camouflage of this party—the so-called Kellogg Peace Pact, we are tempted to wonder whether all the suffering and sacrifice and sorrow of this conflict was not in vain, and whether or not the world has in reality been made any safer for democracy.

But be that as it may, the fact remains that, as a direct result of this war, at least one great benefit has come to mankind. Perhaps, the greatest good to accrue from this terrible struggle was the tremendous impetus given the feeble efforts then being made to control venereal diseases in civil life. The splendid military program carried out during and immediately following the war taught many valuable lessons in venereal disease control. Up to this time the seriousness of the venereal problem was scarcely realized. We had only rather wild guesses on which to base opinions as to the prevalence of these diseases. The draft examinations gave a valuable cross section through the population. It will be recalled that, of the great horde of young men who presented themselves for draft examination, about 1 per cent showed evidences of syphilis. It was, of course, recognized that this 1 per cent of manifest infection represented but a small part of the actual infection that would have been revealed by Wassermann tests. Colonel Vedder's report of Wassermann surveys in various large groups of the army furnishes striking evidence of this fact. For instance, in a group of 1,577 white enlisted men of whom 3.4 per cent were known to have syphilis, he obtained 12.6 per cent positive reactions. In a group of 3,203 candidates for commissions in the regular army, 5.8 per cent gave positive Wassermann reactions. He also obtained 5.4 per cent positive reactions among cadets at West Point who had no outward manifestations of the disease.

The nation is indeed greatly indebted to Dr. Wm. F. Snow and to his colleagues for the formation of the American Social Hygiene Association and for their effort in inducing government authorities to adopt the novel program launched against the venereal diseases during the World War. Prior to the war, the venereal diseases had been regarded by army and navy authorities as a more or less necessary concomitant of military life. After more careful consideration, however, they definitely accepted the single standard of sex morality and set themselves squarely behind the promotion of continence and clean living among men of the army and navy. For the first time in the history of the world the heads of great military organizations seriously undertook the task of diminishing the opportunities for venereal disease infection. Red light districts adjacent to camps and cantonments were broken up and infected women were placed in quarantine.

The three-fold program for the control of venereal diseases carried out by the government officials is well known to all.

The medical phase provided for treatment and prophylaxis—and punishment for those exposed who failed to use the prophylactic clinic. The vice repressive phase undertook the destruction of the red light districts—or nests of infection—the quarantine of prostitutes, and the establishment of recreational centers offering positive opportunities for wholesome physical and mental development. The educational phase stressed continence as the only sure preventive and emphasized the single standard and the duty of each man to himself, his future wife and his country to keep himself physically and morally clean.

And after the war, financial aid was received by the states through the Chamberlain-Kahn Act, which provided grants to the states on a fifty-fifty basis for the creation of State Departments of Venereal Disease Control and the maintenance of Venereal Disease Clinics. Unfortunately, the appropriations under this Act are no longer available. Our wartime enthusiasm seems to have waned and we now find ourselves on the crest of the receding wave.

In bringing this subject, "The Prevention of Syphilis in Virginia," to your attention, it is not my purpose to attempt to add anything new, but, by reviewing the subject briefly and looking facts squarely in the face it is hoped that some discussion may be provoked which may tend to revive our enthusiasm and quicken our efforts in the solution of this, the greatest public health problem confronting the people of Virginia today. And what is said of the prevention of syphilis may be applied equally as well to gonorrhea and chancroid.

In the first place, I should like to call your attention to syphilis as the greatest killer. In the State of Virginia last year, syphilis was given as the cause of death on only 296 certificates. In my own city, Roanoke, it was assigned as the cause of death in only eight (8) instances. If these certificates told the whole story, syphilis would not be such a serious problem. But, if we are to accept the opinion of many eminent authorities, syphilis is responsible for a great many deaths each year, when, for various reasons, the word syphilis is not even mentioned on the death certificate. When we add to the few deaths assigned to syphilis the deaths under other classifications that should have been ascribed to syphilis, we have quite another story. Many attempts have been made to allocate to syphilis the deaths presumably due to this disease. The greatest variation in these estimates necessarily exists since they are personal opinions. However, the composite opinion of a large group of authorities on any subject should have some significance. While no one really knows the true percentage of deaths due to syphilis, yet nearly everyone agrees that the proportion is large and even when the most converative figures are taken as the most probable, we find that syphilis is converted from one of the minor to one of the major causes of death.

It seems that the table prepared by the American Social Hygiene Association based on the opinions of many eminent authorities, expresses quite accurately the consensus of opinion of those qualified to form opinions.

I have taken the trouble to ascertain the opinions of several of the leading clinicians in our own State as to the accuracy of the percentages in this table, when checked by their experience. As expected, there was a wide diversity of opinions on the table as a whole and as to individual items. No one thought the percentages too low; some thought them too high—except, of course, those for locomotor ataxia, general paralysis of the insane and congenital debility. The majority thought the percentage ascribed to angina pectoris (50 per cent) a little too high, while it was the opinion of a large majority that the percentage for aneurysm should be raised from 40 per cent to 95 per cent.

It was noticeable that the clinicians whose practices embraced the larger proportions of the working classes on whom Wassermann tests had been made, were the physicians to give the higher percentages. For example, one physician, who for many years has been the chief clinician for a large industrial plant in Newport News, Va., where practically every person attending either the medical or surgical clinic is given a Wassermann test, thought none of the percentages of the table too high. Through the courtesy of the Department of Vital Statistics, we have secured the total number of deaths from the various diseases listed in this table for the State during 1927, and also the number of deaths from several diseases long conisdered among our greatest killing diseases. These are shown graphically in the chart together with the figures for the City of Roanoke. You will note the similiarity of the figures for a rather typical city and for the State as a whole.

We are, of course, not unmindful of the probability of errors in diagnoses; nor are we, on the other hand, unmindful of the deaths from tuberculosis, pneumonia and many other diseases that would never have occurred but for the underlying, unsuspected syphilis. When we add to the deaths reported as due to syphilis the deaths under other classifications that should have been ascribed to syphilis in accordance with percentages in this table, and compare them with deaths due to these other diseases, we have a picture which is shown in the accompanying chart.

A disease that causes such a large number of deaths must of necessity be quite prevalent. In recent years many groups in the civilian population have been examined intensively through the use of the Wassermann test and many estimates of the prevalence of syphilis have been made. Here, again, it is obviously inaccurate to gauge the extent of infection in the entire population by its prevalence in any special group. However, a very fair estimate

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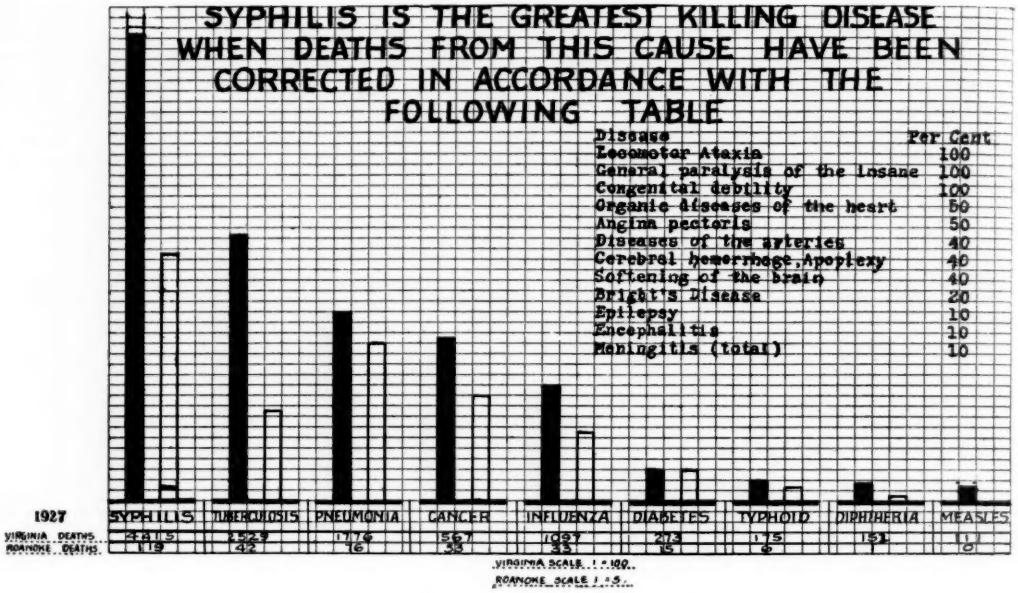
SYPHILIS IS THE GREATEST KILLING DISEASE WHEN DEATHS FROM THIS CAUSE HAVE BEEN CORRECTED IN ACCORDANCE WITH THE FOLLOWING TABLE
Disease Per Cent
Locomotor Ataxia 100
General paralysis of the insane 100
Congenital debility 100
Organic diseases of the heart 50
Angina pectoris 50
Diseases of the arteries 40
Cerebral hemorrhage, Apoplexy 40
Softening of the brain 40
Bright's Disease 20
Epilepsy 10
Encephalitis 10
Meningitis (total) 10
1927
SYPHILIS TUBERCULOSIS PNEUMONIA CANCER INFLUENZA DIABETES TYPHOID DIPHTHERIA MEASLES
VIRGINIA DEATHS 4415 2529 1776 1087 273 175 151 111
ROANOKE DEATHS 119 42 16 33 15 6 1 0
VIRGINIA SCALE 1"=100.
ROANOKE SCALE 1"=5.

Syphilis Is The Greatest Killing Disease
Proportions of Deaths Under Other Classifications That Should Be Ascribed To Syphilis

Disease	Per Cent	Number of Deaths, Roanoke, Va. 1927	Percentage due to Syphilis	Number of Deaths, Virginia, 1927	Percentage due to Syphilis
Syphilis	100	8	8	296	296
Locomotor ataxia	100	1	1	21	21
General paralysis of the insane	100	0	0	64	64
Congenital debility, icterus, sclerema	100	9	9	397	397
Angina pectoris	50	10	5	332	166
Organic diseases of the heart	50	112	56	3897	1948
Diseases of the arteries, atheroma, aneurysm	40	19	7	326	130
Cerebral hemorrhage, apoplexy	40	54	22	2056	822
Softening of the brain	40	0	0	22	9
Bright's Disease	20	49	10	2722	544
Epilepsy	10	1	0	61	6
Encephalitis	10	3	0	34	3
Meningitis (all)	10	9	1	95	9
Total deaths due to Syphilis			119		4415

1927 Deaths in Virginia—All Causes—28,772.
1927 Deaths in Roanoke—All Causes—859.

of the whole may be obtained by taking the average of many parts. The one day surveys conducted by the U. S. P. H. S. in Cleveland, Detroit and many other large cities, as well

as the recent surveys of Virginia Cities and Counties will serve to give some concrete idea of the prevalence of syphilis and the other venereal diseases . Since the cases not under treatment are not included, these figures, obviously, represent but a small fraction of the cases actually existing in these cities on the day of the survey. However, in the future, these figures will serve as a valuable basis for comparison when attempting to determine whether these diseases are on the increase or decrease. The percentage of positive Wassermann tests mentioned in Dr. Osler's address on Syphilis (recently sent by the State Department of Health to the physicians of the State) are quite significant, since Dr. Osler vouches for the accuracy of these tests. At the Brigham Hospital, Boston, 15 per cent of those examined had syphilis; in Baltimore, 10 per cent of those examined had syphilis; and at the University Hospital, Philadelphia, 14 per cent were found to be infected. Many other reports are equally as startling.

At the Roanoke Hospital, of the 807 Wassermann tests made during 1928 as a part of the regular routine examination of those admitted to the hospital, 12.8 per cent were positive. Dr. VanderHoof reports that of 2,449 patients—white and colored—from the out-patient and in-patient clinics of the Medical College of Virginia, 44 per cent showed complete fixation, with an additional 12 per cent giving partial or incomplete reactions. On the basis of his wide experience in examining men in the army, Col. Vedder estimates that about 20 per cent of the young adult male population of this country, from which the army is recruited, have syphilis. It is generally agreed that the percentage of syphilis in the negroes of this State is practically double that for the whites.

If these and an enormous accumulation of similar figures have any significance, we may, with a fair degree of accuracy, assume that at least 10 per cent of the entire population of Virginia are infected with syphilis.

I have shown something of what this means to Virginia in mortality. Time does not permit even the mere mention of the horrors of its morbidity. Blindness, decreased efficiency, dependency, delinquency and insanity are only a few of the pathetic pictures with which we are too familiar.

If these things be true, what are we as Health Officers and Public Health officials (whose duty it is to prevent disease) doing, and what are we going to do to prevent the continued spread of this disease? Since there is no intermediate animal or insect host—and in the control of syphilis we must reckon directly with the will of the individual and with one of the strongest of the cardinal appetites of man-sex desire—its prevention is obviously an exceedingly difficult task.

But because the task is difficult, should we assume the attitude of despair and follow the line of least resistance?

What would we do and what would the people of Virginia expect of us should 10 per cent of the population of this State have smallpox?

Surely the "Great Pox" is equally as serious a disease as smallpox. Let us then face the facts: At least 10 per cent of the people of Virginia are infected with a very serious, chronic, maiming, fatal disease—syphilis; the cause of this disease is known; the cure is known; and the means of transmission are known.

Strange, indeed, it seems that syphilis is a disease about which so much is known and about which so little is said.

How strange does this silence seem when compared with influenza, for instance, about which nothing is known and about which so much has been said!

Are we quite fair to the people of Virginia to hold up cancer as such a scourge—causing the death of one out of every ten women over forty years of age; to talk so much about the great plague, tuberculosis—one out of every ten deaths; to point out the ever-increasing ravages of the so-called degenerative diseases of middle life—responsible for so many deaths, and say so little about syphilis, the greatest scourge, the greatest plague, the greatest producer of invalidism, the greatest wrecker of homes and the greatest producer of death—responsible for at least one out of every seven deaths?

The prevention of this curse of mankind entails and merits an enormous amount of effort, with ramifications in practically every sphere of human life. All these fields of endeavor are very well embraced in the "American Plan of Control," with which you are, of course, entirely familiar. I should like to stress but one phase of this plan—*Quarantine.*

In considering the prevention of syphilis,

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the entire population of the State (as with the other communicable diseases) is divided into two great classes: Those who have syphilis and those who have not—or the sick and the well.

For the latter (the well), we would recommend education—education which not only gives information, but inclines the will to conform to those standards of conduct which are for the good of the whole as well as the individual. Such education should, of course, embrace information concerning the seriousness and the prevalence of the disease; the scientific facts concerning sex—including the fact that continence is not incompatible with perfect health; and also the fact that the sex organs are not muscles, and therefore do not require exercise to be kept in perfect condition.

The former class—the diseased—is divided into several groups according to their knowledge and their regard for rights of others.

1. There are those who know the seriousness of their condition, the danger to others, and have a fair regard for the welfare of others. These also need education and facilities—through free clinics and otherwise—for prompt and adequate treatment.

2. Those who know very little of the seriousness of their condition, or of the danger to others, and are therefore very careless. These are tragically dangerous. This class includes many morons, semi-morons and feeble-minded who should be handled by the Department of Public Welfare and confined indefinitely in institutions for the feeble-minded.

3. And, finally, we have the largest and most dangerous group—composed mainly of prostitutes—those who know the seriousness of their condition and the danger to others, but are perfectly indifferent to the welfare of others. These are criminally dangerous, and should be placed in absolute quarantine.

It is to this third group that I wish to call your attention at this time, since this group constitutes the greatest menace to society and at present seems to be receiving but very little attention.

The State is indeed to be congratulated upon the splendid educational program now being conducted by the Bureau of Social Hygiene, and especially that part of the program which endeavors to provide scientific sex education for the teachers of the State. This knowledge of sex hygiene, when acquired by the teachers and given to the children of the State, will be possessed in a very few years by the parents of the State, who will in turn impart it to their children, and so on from generation to generation. It is quite proper that sex education should be given children by parents, who know when and where and how to approach this subject. When commenting on this educational program, our Health Commissioner said: "This is doubtless the logical way to attack one of the greatest menaces to civilization."

While we have the greatest confidence in education, and believe that this plan will eventually be productive of great good, yet experience has shown that knowledge of right does not always produce right living, and so long as men and women remain human they will be prone to yield to temptation. While monogamy, which has gradually developed as a result of moral and economic considerations, is accepted as the morally correct social state in Virginia and the civilized world, yet polygamy biologically is a natural condition, and as yet education and morality have not been able to restrain man from promiscuity—the underlying cause of prostitution. Education may tend to prevent prostitution, but it has not done so and, if we may judge the future by the past, it will doubtless require a great many years for education to bring about the non-existence of this third group, composed, as we have said, mainly of professional, amateur and clandestine prostitutes, who care nothing for the welfare of others, but deliberately, wilfully and often maliciously transmit these diseases.

While waiting for education to effect these desirable changes in our social structure, a great wall should be built about these main sources, or springs of infection, as a means of protection for the present and many succeeding generations. Fortunately, Virginia already has an excellent Venereal Disease Law. Based largely on the standard form, it embraces practically all of the essential features for the complete repression of prostitution and the control of venereal diseases. Under this law the Health Officer is given almost unlimited power, which is a very wise provision.

Among other things, this law says that (owing to the prevalence of venereal diseases among these classes) persons found guilty of any one of a list of nineteen different offenses must be sent by the court to the Health Officer

for examination. It further provides that "Upon the receipt of a report of a case of venereal disease in a person conducting himself or herself in such a manner as to be a menace to the public health, it shall be the duty of the Health Officer to institute measures for the protection of other persons from infection by such diseased person."

"Local Health Officers are authorized and directed to quarantine persons who have or are reasonably suspected of having syphilis, gonorrhea or chancroid, whenever in the opinion of the Health Officer quarantine is necessary."

Section 4548g of the Code provides for an indeterminate commitment to the State Board of Public Welfare for "not less than three months nor more than three years," of females convicted of prostitution and being a keeper, inmate or frequenter of a house of ill-fame, prostitution or assignation, or for soliciting or associating with persons of ill-fame, or being contributory to the delinquency or dependency of others. The State Board of Public Welfare may in turn commit such persons to a state institution or some other suitable institution.

Section 4548f of the Code provides that any person guilty "of prostitution or of being a keeper, inmate or frequenter of a house of ill-fame, prostitution or assignation, or soliciting for immoral purposes shall be examined for venereal diseases by the Health Officer or a physician appointed for this purpose, and, if infected, such persons are *not* to be fined but shall be committed to a city farm or hospital if available, or to the jail, or to any hospital for the treatment of venereal diseases which has been or may be established in this Commonwealth." There is no conflict, or overlapping of duty or authority, between Health Officers and police authorities, but ample provision is made for the closest cooperation in the handling of these cases.

It is well known that the majority of this group (the scum and driftwood of society) float from city to city as the prospects for improved business change from time to time. Since they have no permanent abode, they should not be considered the problem of any particular community, but of the State as a whole. In fact, this problem is national and even international in its scope, but State control is perhaps all for which we may at present hope. The establishment and maintenance of a suitable institution for the quarantine and treatment of this group by each city or community would entail much unnecessary duplication of effort in supervision and in general overhead expense, which should be avoided if possible. Therefore, it seems that the greatest need (certainly the greatest public health need) of the State today, and the missing link in an otherwise strong chain of venereal disease control, is a suitable institution for the quarantine of prostitutes and other females of group three. The males of this group, since they are fewer in number, may be conveniently cared for locally in jails or on city farms.

Many arguments have been advanced against such an institution. Among the objections often mentioned is the cost of maintenance. Cost of maintenance need be neither excessive nor prohibitive. For example, at the Detention Home at Newport News, Va., in handling approximately 500 patients from July, 1921, to July, 1924, the average cost of maintaining each patient per day was only eighty-one cents. When an average of twenty patients per month was maintained, this institution was run on the allowance from the State as for persons in jail. This did not include interest on investment, drugs, or medical attention, as the building was a gift, the drugs were furnished by the State, and the medical care of the patients was a part of the duties of the Assistant Health Officer. It did include the salary of a Superintendent, a nurse, a matron and a social worker, as well as the general upkeep of the building, equipment, heat, light and food.

The patients were given an abundance of plain, wholesome food at a cost of twenty cents per patient per day. Each meal was accurately weighed and the caloric value computed to insure the provision of at least 2,000 calories per patient per day.

The last legislature of Virginia appropriated $1,012,480 for the care of the insane in this State, or nearly twice as much as the entire amount appropriated for public health work. Would it not be good business, to say nothing of the humanitarian and sociological aspects of the subject, to expend a little more for the prevention of syphilis, which causes at least one-fourth of this insanity? When the benefits to be derived from an institution for quarantine are taken into consideration, the cost of maintenance becomes quite insignificant. Each city should, of course, maintain a place

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of detention for those apprehended by the court or the local Health Officer as being suspected of having a venereal disease while undergoing examination to determine whether or not they are infected. If found to be infected, they should then be committed by the local Health Officer or the court, as the case may be, with the consent of the State Commissioner of Health, to the State institution for treatment, rehabilitation and readjustment to society. The recently organized traveling psychiatric clinic of the Department of Public Welfare should be of inestimable value in the examination and in the rehabilitation of these patients.

The formation, at the recent meeting of the Medical Society of Virginia, in Danville, of a society of physicians who are particularly interested in the control of venereal diseases, was indeed very gratifying and suggestive of the present trend of thought and of an awakened interest among physicians in this problem.

Should the State Department of Health determine upon a policy of absolute quarantine for those infected with venereal diseases who make a business of infecting others, and endeavor to secure the passage of a bill authorizing the establishment of a suitable institution with an appropriation for the necessary funds for its construction, equipment and maintenance, we feel sure the Department will have not only the backing of this recently organized society, but also the hearty support of all well-informed, conscientious physicians of the State. Such a plan should and would have the whole-hearted endorsement and support of the members of this organization.

Through united effort, first, in the education of the public, and, then, with the public, in the education of the representatives in the legislature from our respective communities, there should be little difficulty in securing the passage of such a bill.

"Truth is mighty and will prevail." Self-preservation is not only the first law of nature, but it is in reality an instinct. Often even above this instinct for self-preservation is the desire to preserve and promote the well-being of the offspring. When the people know the truth, they will respond.

Many states have reformatories or other institutions for the care of women, where treatment is given those found to be infected, but since their chief purpose is reform or punishment for crime, none of these seem to embrace all of the desirable features of an institution whose primary object is quarantine as a public health measure for the prevention of disease.

As Virginia has been first in so many things for the good of the Nation, may she be the first to establish a place of quarantine for the chief disseminators of the venereal diseases, the first to put into effect, completely and effectually, the "American Plan of Control," and lead the way in the solution of this problem and in the conservation of human health and happiness.

THE MEDICAL TREATMENT OF DUODENAL ULCER.*

By PAUL F. WHITAKER, M. D., F. A. C. P., Kinston, N. C.

Chronic peptic ulcer is a common disease, occurring in 12 per cent of a series of 2,000 necropsies. According to Rivers, of the Mayo Clinic, only 30 per cent of the cases of peptic ulcer were definitely diagnosed before admission, and only 10 per cent had had fairly adequate treatment. These figures are quoted to emphasize the necessity of early diagnosis and prompt institution of treatment in a condition which is apparently increasing. It goes without saying that accurate diagnosis is prerequisite to rational treatment.

Once the diagnosis is established, rational treatment, whether medical or surgical, should be promptly undertaken. There are those who believe that every case of peptic ulcr, whether gastric or duodenal, should be treated surgically, and there are others who take the opposite view that all cases of peptic ulcer, whether gastric or duodenal, should be treated medically. Between these two extremes there is a middle ground where sound reasoning and deduction in the individual cases should decide the issue between surgical or medical therapy. Lewisohn, of the surgical service of Mount Sinai Hospital, reports, after a careful survey of ninety-two patients upon whom gastro-enterostomy was done for duodenal ulcer, that 47 per cent were cured, 19 per cent had slight complaints, and thirty-four had gastro-jejunal ulcers. He has now replaced gastro-enterostomy with partial gastrectomy, and states that he has reduced the bad results following surgical treatment from 50 to 5 per cent. In the light of these figures plus an operative mortality of from 2 to 10 per cent, no one can say that surgical treat-

*Read before the Seaboard Medical Society, at Washington, N. C.

ment is entirely satisfactory. VanderHoof states that practically every case of uncomplicated duodenal ulcer is curable by adequate medical treatment, but that in actual practice only about 50 per cent of the patients are permanently cured. He attributes this to failure of the patient to cooperate as to details or duration of treatment. Nevertheless, they are failures whether it be the fault of the physician or the patient, and must be listed as such. My own experience with a series of forty-six cases of duodenal ulcer teaches that the success of medical treatment depends to a great extent on the intelligence of the patient, and the ability of the physician to make him understand his condition and to make him cooperate. Surgical treatment is certainly indicated in peptic ulcer, either gastric or duodenal, when it is associated with pyloric obstruction, peri-duodenal adhesions, or diseases of the gall-bladder or the appendix. The physician who persists in treating ulcer complicated with these conditions brings only suffering to the patient, and discredit and loss of prestige to himself. Due to the fact that a certain percentage of gastric ulcers undergo malignant degeneration, the internist who treats this condition assumes a heavy burden of responsibility. Uncomplicated duodenal ulcer should be treated medically, and surgery only undertaken after repeated failure of medical treatment, or in the instance of perforation.

The principles of the treatment of duodenal ulcer were first brought out by Sippy in 1912, and again in 1915. Numerous modifications have been recommended, but the basic principles remain the same. There are two all important requirements in the treatment of ulcer: The ulcer must be given a chance to heal, and all possible sources of infection which could have given rise to the ulcer should be eliminated. The control of pain and the institution of the healing process seem to be intimately associated with marked reduction in gastric acidity, and, if a favorable result is to be obtained, this must be accomplished.

Frequent Feedings and Diet: Frequent feeding is by far the most potent therapeutic measure that we have in controlling gastric acidity, the frequent feedings, keeping the acid combined with the food. The more I treat peptic ulcer, the less I think that it is necessary to hospitalize the patient except in certain instances of severe pain, or marked pylorospasm. These cases usually do best on an ounce and a half of milk and an ounce and a half of cream every hour from 7:00 A. M. to 8:00 P. M. It seems to me to be hardly fair to keep the average working man, or man of modest means in bed in a hospital for three weeks, causing him to lose all this time from his work, and at the same time having to undergo the heavy expense of hospitalization, when there is at least a 50 per cent chance that he may have a recurrence. There are advantages to this treatment in that it allows the physician, by frequent gastric analysis, to check upon gastric acidity and occult blood in the stools, and thus watch the progress of the patient. It is my practice to do a gastric analysis and test the stool for occult blood at frequent intervals on my hospital cases. Hospital treatment by the Sippy method should be reserved for those who have the leisure and money to spend for this service. As already stated, it is occasionally necessary to hospitalize for a week or ten days a case with acute pain or marked pylorospasm and feed them every hour until this is controlled. For the vast majority of cases, however, six feedings a day will suffice. It is my practice to allow my patients to eat three regular meals each day, and midway between each meal and at bedtime to drink a glass of milk, a raw egg, or several Uneeda biscuit. If the patient is to stay at work, he must certainly be properly nourished, and he is given a printed diet list, on one side of which are printed the foods allowed and on the other side the things forbidden, and told to eat as much as he likes at a meal. The diet is liberal, and there is no privation about it, only the foods with rough scratchy material, such as nuts, celery, berries, raw fruits, gristles, etc., being eliminated. Highly seasoned food with pepper, vinegar, spices and alcohol are forbidden.

Drugs: To aid in keeping the hydrochloric acid content of the stomach under control alkalies are indicated. A mixture containing ten grains each of magnesium oxide, sodium bicarbonate and bismuth subcarbonate after each regular meal and at bedtime has proven very satisfactory. It not only reduces gastric acidity, but usually has a mild laxative action, giving the patient on an average of one to two stools a day. If this action is not obtained, then two ounces of heavy mineral oil

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should be taken at bedtime. Because of its excellent affect in relaxing the pylorus, belladonna is certainly indicated. The tincture is usually given in ten minim doses three times a day. Belladonna very probably renders the control of acidity more likely by its inhibitory action on the acid glands. A large percentage of ulcer patients are of the nervous hypersensitive type and sleep poorly. In these cases I unhesitatingly prescribe luminal over a long period of time without any apparent ill effect. An element of danger in the use of alkalies in large doses might be mentioned. When a patient who has been getting along well begins to complain of headache, or that the milk tastes sour, the alkali should best be discontinued in order to prevent the occurrence of a possible alkalosis.

Eradication of Foci of Infection: Though in many respects the etiology of peptic ulcer is still obscure, Rosenow, Meisser, and others have shown conclusively that certain strains of streptococci have a special affinity for gastro-duodenal tissue. Meisser has shown how organisms from dental infection in cases of peptic ulcer after inoculation into the dental root canal in dogs have resulted in the prompt formation of ulcers scattered through the stomach and duodenum. I have frequently noted an exacerbation of symptoms in ulcer patients after removal of foci of infection. In the light of these observations, it would seem unreasonable not to take advantage of these lessons learned in the laboratory, and make the eradication of infectious foci a matter of routine.

Dangers of Severe Exercise: The danger of severe exercise in the patient with peptic ulcer is a factor in the treatment that current literature seldom mentions, and which I believe to be of great importance. This was very forcibly impressed upon me by a recent case. A young intelligent farmer, who had been under observation for three weeks, and who was getting along nicely, was superintending the loading of some bales of cotton into a truck. Getting impatient with the laborer, he himself took hold of a bale of cotton and gave a sudden tug. This was immediately followed by a recurrence of pain with nausea which lasted for an hour. This in turn was followed by a recurrence of symptoms, the hunger pain and dyspepsia returning. He finally had to be put to bed for a week and given hourly feedings before symptoms were controlled. Most patients with peptic ulcer state that their symptoms are worse in the fall or spring. It is in these months that the average working man performs his heaviest manual labor. The anatomic arrangement of the first portion of the duodenum, serving as it does as a sort of hook from which the stomach swings, may have something to do with the tendency toward ulceration at this point.

Control of Patient and Duration of Treatment: If a cure is to be obtained by the procedure outlined in the medical treatment of peptic ulcer, control of the patient is absolutely essential. This, to my mind, is the most difficult part of the treatment. Relief of symptoms is usually prompt after treatment is instituted, and the patient is apt to feel that he is well and discontinue treatment. It is only by careful painstaking explanation of the principles of treatment by the physician, and insistence as to the carrying out of details, that cooperation on the part of the patient is to be obtained. In so far as possible he should be made a student of the subject, and impressed with the fact that the successful handling of his disease rests entirely with him.

The question of how long treatment is to be continued is important. It has been my practice to insist that every detail of the treatment be carried out for a period of one year. After the expiration of this period, all medication is discontinued, but the patient is encouraged, and often does, of his own volition, continue the frequent feedings. I have patients who are symptom free for four years after carrying out treatment for one year. My conviction is that patients with uncomplicated duodenal ulcer should be given adequate medical treatment and only in the event of its failure should surgical procedure be considered.

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PAPILLARY CARCINOMA OF THE LARYNX—REPORT OF A CASE REQUIRING LARYNGECTOMY.*

By E. TRIBLE GATEWOOD, M. D., Richmond, Va.

According to Eggston, from a histologic point of view only 1 per cent of carcinomas of the larynx are papillary in nature.

Review of the literature shows carcinoma of the larynx may follow the pre-malignant stage of either syphilis or tuberculosis. Sir St. Clair Thompson says, "I do not think that a frank papilloma or fibroma of the larynx becomes malignant, but the manifestation of malignant disease is, in a certain number of cases, foreshadowed by some vocal defect."

Jackson reported a case of papilloma of the larynx, that was followed thirty years later by cancer, and another similar case followed by cancer eight years later.

Mackenty recently reported a case of papillary carcinoma of the larynx in a woman, twenty years of age, who had hoarseness for three years. Neither Jackson nor Mackenty made any mention of antecedent pathology in their case reports.

It would seem that papillary carcinoma of the larynx is unusual, and especially so when compared with the frequency of like lesions in the bladder or elsewhere about the body.

The following case report should be of interest, because it appears from the clinical course and other studies that this patient had been subject during the period of eight years to an unusual laryngeal triad, i. e., chronic infiltrative laryngitis, papilloma and carcinoma:

L. B. A., white, aged forty. Referred by Dr. Chas. Caravati, December 9, 1928.

Complaint: Hoarseness, dyspnea, and loss of weight.

Family history: Negative for malignancy and tuberculosis.

Past history: Unimportant.

Habits: Moderate smoker, alcohol used in moderation for years.

Present illness: During the year of 1920 hoarseness appeared after unusual voice strain. The attacks were short and gave little concern until 1921, when he noticed his voice did not return to normal. He consulted a physician and received local treatment for months, without any definite improvement. He was treated by other specialists, at intervals, during 1922-1923, with little relief. February, 1924, he was studied thoroughly, from a local and general standpoint, at a very noted throat clinic, and given a diagnosis of infiltrative laryngitis and diseased tonsils. He was advised to have

Fig. 1.—Photograph of patent showing end of trachea united to the skin.

the tonsils removed and to give the voice complete rest for six months. Treatment influenced his local condition but little. Hoarseness was continuous and gradually progressive during 1925 and 1926.

About the middle of 1927 dyspnea developed upon exertion, in addition to the hoarseness; and during the major part of 1928 dyspnea was constant and progressive. April, 1928, after a coughing spell, he spat blood, and, as his respiration was thought to simulate asthma, he moved to Asheville for climatic reasons.

December 9, 1928, when I first saw the patient, he was decidedly hoarse and his respiration was obstructive in character. Indirect laryngeal inspection showed enlarged infiltrated arytenoids, suggesting a hypertrophic laryngitis, with obliteration of the false and true cords. The normal interior landmarks appeared to be replaced with bilateral tissue pro-

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liferation, thereby reducing the normal airway more than 50 per cent.

The oral and nasal cavities appeared to be normal. There were no glands palpable, and the adjacent laryngeal structures were normal. The patient was studied thoroughly by Dr. Caravati from the physical and laboratory standpoint and pronounced negative.

December 11, 1928, patient was admitted to the Johnston-Willis Hospital, and direct inspection of the larynx made with the Jackson speculum. Tissue proliferation was evident

Fig. 2.—Photograph of patient using Mackenty artificial larynx without tracheal tube.

in the subglottic area in a diffuse manner. A section was taken from the glottic region for histologic study, which proved we were dealing with a papillary carcinoma.

In view of the extensive involvement, a total laryngectomy was indicated. The two stage operation recently described and practiced by New, of the Mayo Clinic, was followed. This type of technic lessens the immediate post-operative reaction as well as the possibility of secondary mediastinal infection.

Having placed the naso-esophageal feeding tube in position, the first stage briefly consisted of separating the isthmus of the thyroid gland; skeletonizing the larynx and the three tracheal rings anteriorly and laterally, and severing the body of the hyoid bone.

The wound was closed with the exception of the anterior portion of the cricoid cartilage and the first tracheal ring. This area was left exposed for the purpose of doing a tracheotomy as soon as the temperature reached normal. This is done so the patient may adjust himself to that form of respiration, and also build up a wound resistance to the bronchial secretions, which must contaminate the second stage operation.

The reaction following the first stage was mild, temperature not going above 101 and receding to normal on the fourth day. Four days after the initial operation, a cricoid cartilage plug was removed and a tracheotomy tube inserted. This was followed by a slight rise of temperature for five days.

The second stage was performed eight days after the first, and this consisted of re-opening the entire wound, completing the laryngeal dissection posteriorly and superiorly, closing the anterior opening in the esophageal wall, and severing and attaching the proximal end of the trachea to the neck skin. A laryngectomy tube was placed in the tracheal opening and the rest of the wound closed tightly.

Fig. 3.—Photograph of patient using Mackenty artificial larynx with tracheal tube.

The immediate post-operative reaction was not unlike that following the first stage. The feeding tube was made use of for twenty-two days and the patient was discharged from the hospital on the thirty-fourth day.

Comment

The clinical course of this case, as well as the microscopic studies, substantiate the co-existence of three laryngeal diseases.

First; there was no clinical evidence of a new growth after three years of obstinate hoarseness.

Second; the progressive symptoms of obstruction, approximating two years with no extra laryngeal invasion, favors benign origin.

Third; microscopic study showed a papillary process undergoing malignancy, and another specimen, taken some distance from the former, indicated a chronic inflammatory process.

Professional Building.

PERFORATED GASTRIC AND DUODENAL ULCERS.*

By T. JEFFERSON HUGHES, M. D., Roanoke, Va.

Perforated ulcers may be acute, sub-acute or chronic. Acute, when the symptoms are sudden and the contents of the viscus are free to escape into the peritoneal cavity; sub-acute, when the opening is exceedingly small or has been closed by adhesions or plugging by omentum or lymph; and, chronic, when firm adhesions have formed between the ulcer and adjacent structures.

Perforation usually occurs in a chronic ulcer. In sixty-one deaths occurring at the Leed's Infirmary from 1910 to 1920, sixty were from perforation of chronic gastric ulcers, and in 117 deaths from perforated duodenal ulcers 105 were of the chronic variety. In 218 cases of perforated duodenal ulcers and 248 cases of perforated gastric ulcers, only twelve out of the combined number gave no symptoms of previous stomach trouble.

The cause of gastric and duodenal ulcers has not been ascertained, and, although admitting of much varied theorizing, will not be discussed at length in this paper. Whether its origin centers around the theory advanced by Rokitansky and Berthold in the first part of this century that it is due to localized vascular disturbance and subsequent focal nutritional changes due to digestive action of gastric secretion on the devitalized tissue, or to the neurogenic theory that ulcers are the result of dysfunction of the vegetative nervous system, producing spasm of localized areas, causing a circumscribed ischemia of the mucosa, or to some other cause, does not alter the case in hand when perforation has occurred, in so far as the immediate problem is concerned. Ulcers are much more common in men, and usually occur between twenty-five and sixty years of age.

Symptoms and Diagnosis

The symptoms of perforated ulcers are usually characteristic; and a diagnosis of perforation is ordinarily easily made. The location of the perforation may be difficult to diagnose, but, when the calamity comes, it is exigent we recognize that whatever has happened and wherever its origin, it is something which gravely threatens life, and the adoption of rescue measures is a cardinal obligation. We should know what to do rather than what has happened if only one of these can be known. That a disaster has taken place within the abdomen is apparent, and the employment of operative measures is imperative. The history of a more or less characteristic train of symptoms and often of a previous diagnosis of ulcer usually clears the way to a quick diagnosis of perforation.

A sudden onset of terrific, tearing, racking, bursting pain, usually over the entire abdomen, particularly the upper part, which spreads over the lower part of the chest and sometimes up to the shoulders, marks the onset of acute perforation. The face is pale, anxious and appealing. Short panting respirations, costal in character, diaphragm immovable, nostrils dilated, mouth closed, cold perspiration, legs drawn up, pulse quick, all combine to give a picture of profound shock.

The characteristic pain, awakening a patient at night, is usually due to perforation of a duodenal ulcer. The pain is, however, not always so characteristic, for, instead of being general, it may be localized, depending somewhat on the location of the perforation. If the pain occurs over the right iliac region, it is due to irritation of the peritoneum from the downward drainage of the gastric or duodenal contents, and may lead to an erroneous diagnosis of appendicitis. The pain is sometimes referred to the tip of the right shoulder. Vomiting is of frequent occurrence, but, as strange as it may seem, blood is rarely seen in the vomitus. The symptoms of intense shock are due to acute peritonitis. If these symptoms improve within a few hours, it may be due to temporary plugging of the perforation by stomach contents or omentum, and may lead us to a wrong diagnosis and a dangerous postponement of operative measures.

While the characteristic symptoms are present in most cases and the presence of perforation is readily recognized by the average physician, yet we realize that there are cases which tax the diagnostic acumen of a master. Especially is this true after the primary symptoms of shock subside. A point which might be well to remember is that vomiting has no effect on the pain. Acute perforation of ulcers is usually first seen by the family physician and upon his recognition of the disaster and promptness of action depends the lives of these patients. If it is desired to make a diagnosis of the true condition within the abdomen be-

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fore operation, X-ray may help to clear up the question of perforation. Free gas in the peritoneal cavity demonstrates almost conclusively that there has been a perforation in the gastro-intestinal tract somewhere. With free air within peritoneal cavity, you will usually have diminution in the normal area of liver dullness on percussion, but, with an intensely rigid abdomen and a high degree of tenderness, it is difficult, at times, to make a satisfactory physical examination. An X-ray examination can be made without inconvenience or aggravation of pain to the patient, in the recumbent position, and may clear up a disputed or uncertain diagnosis as to the existence of perforation, but it does not demonstrate its locality. The alarming prostration, intense and agonizing pain and extreme rigidity are usually sufficient indications for opening the abdomen; and the only point gained by knowing the location of the ulcer is to properly locate your incision which may obviate delay and lessen trauma.

Some of the conditions which might produce symptoms simulating those of a perforated ulcer, are gunshot or traumatic rupture of the stomach or intestine, ruptured tubal pregnancy, appendicitis, acute intestinal obstruction, gall stones, and acute pancreatitis.

Do not be misled by the temporary improvement of symptoms of shock which may follow perforated ulcer. This, as has been said by W. J. Mayo, is the most favorable time to operate. Deaver once said, "Better an early operation by an indifferent surgeon than a late operation by a master in these cases."

The following table, taken from an article in the March issue of the *Practitioner*, in London, by Moynihan, will serve to indicate the importance of an early operation. These figures were compiled from Mr. Gray Turner's private cases, and were operated by a most competent surgeon under the most favorable circumstance.

TABLE FROM THE PRACTITIONER.

	No. of Cases	Recoveries	Deaths	Mortality
Cases operated within 6 hours from onset	35	34	1	2.85%
Cases operated from 7 to 12 hours from onset	63	56	7	11.11%
Cases operated from 13 to 18 hours from onset	20	16	4	20. %
Cases operated from 19 to 24 hours from onset	15	10	5	33⅓%
Cases operated over 24 hours from onset	14	8	6	42.85%

The following table, taken from Leed's General Infirmary, covering a period of 6 years and operated by various operators:

TABLE FROM LEED'S GENERAL INFIRMARY.

Perforated gastric ulcers operated under	12 hours	12 to 24 hours	Over 24 hours
Percentage of mortality of gastric ulcers	18.18%	50%	100%
Percentage of mortality of duodenal ulcer perforatione	15.43%	50%	88%

TREATMENT

The scope of this paper eliminates discussion of the medical and dietary treatment of ulcer, and it is conceded that this had previously been employed, consequently, has no place in the immediate treatment of a perforated ulcer.

Medical treatment should be given a fair and diligent trial in all cases of early recognized ulcers, and it will be found that a large per cent will improve, and many will entirely heal, but the physician who advises an extended continuance of palliative treatment in unimproved ulcers assumes a grave responsibility. The surgeon and the internist must, however, work conjointly in the case of perforated ulcer, for it must be realized that prolonged dietary and medical care following operation aids not only the recovery, but is of utmost importance in the prevention of recurrence of an ulcer.

OPERATION

The type of operation depends on the condition of the patient, the location of the ulcer and the skill of the operator. Many of these patients are in a condition of profound shock when they go on the operating table, and will survive nothing more than a rapid closure of the opening, a more radical operation being postponed until later, if necessary. Where there is pyloric obstruction the operation demands, of course, more than simple closure of the perforation by suture.

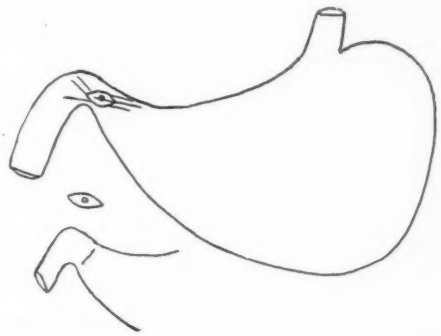
Gastro-enterostomy or some form of pyloroplasty will be necessary, and, if the patient survives the added shock of the operation, a smoother and more rapid convalescence may be expected. Authorities are not in perfect agreement as to method of operation, but the pendulum appears to be swinging toward the more radical operative procedures. I am of the conviction that the patient's physcial con-

dition and the time required to do the operation are the cardinal factors in determining the type of operation to do.

Two or three cases recently operated fully illustrate this emergency. A man, forty years old, was brought to the hospital with the classical symptoms of a perforated ulcer present and exaggerated. He was told positively that an operation offered him the only hope of recovery. This he declined, saying that he would wait until tomorrow and, if no better, he would consider an operation. He was told that he would not be living tomorrow at this time, and was urged with all our power to have an immediate operation, but to no avail, and the patient died at 4 A. M. the same night.

Within a week a similar case, a man forty years old, was brought to the hospital with the same classical symptoms of acute perforated ulcer following drinking a bottle of coca cola. He was promptly apprised of his condition and an immediate operation advised. He at first said he would not be operated on at all. He was told of the case a week before and told that his case would terminate likewise, which impressed him to the extent that he agreed to immediate operation. A perforated ulcer on the posterior aspect of the lesser curvature was readily located, which was closed by in-folding and suture. The gastric contents which had escaped into the peritoneal cavity were removed as far as possible, a cigarette drain inserted, and the abdomen quickly closed. He made an uneventful recovery. It is of interest to note that while both of these cases presented similar symptoms on entry to the hospital, the first case gave a history of indigestion for years, while the second case never had had a symptom of stomach disorder.

A case illustrating a different type of operation might be mentioned. This man, thirty years old, came to the hospital presenting the classical symptoms of perforation. He gave a history of having been operated on for chronic appendicitis and for the relief of gastro-intestional indigestion. He experienced marked relief from his symptoms for about a year following the appendectomy, which may have been due to rest and restricted diet following the operation. The day his ulcer perforated, he walked into a drug store and drank a glass of coca cola, when a sharp, agonizing pain struck him in the upper abdomen which doubled him up, and he was unable to straighten his body until he was put under an anesthetic. A perforated ulcer was readily located on the anterior aspect of the stomach near the pylorus which was resected and closed, as follows: A piece of the stomach wall containing the ulcer was resected longitudinally and the incision



closed vertically, thus serving to increase the lumen near the pylorus, rather than constricting it. He made a smooth and rapid recovery.

Conclusions and Summary

1. Symptoms are usually so classical and regular that diagnosis is easy. This is a disease of twenty-five to sixty year old patients.
2. Disease most likely confused with acute appendicitis.
3. Large majority of cases occur in men.
4. Treatment is definitely surgical and should be done early—within six or eight hours, if possible.
5. Mortality from 45 to 50 per cent.
6. Practically all cases give history of stomach trouble.
7. Do not be misled by occasional improvement of symptoms of shock; nature may have temporarily plugged the opening.
8. Drainage should be used in cases operated on late, where infection is liable to occur.
9. Diffuse pertonitis is immediate cause of death.
10. The great majority of cases occurring near the pylorus leads us to believe that traumatism during the process of digestion is a predisposing cause.
11. The physical condition of the patient and the time consumed in operation should be deciding factors as to the type of operation employed. Speed and conservatism in the profoundly shocked cases will save some that could not survive a prolonged radical opera-

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tion, and should be employed even though a second operation later may be necessary.

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THE MIMICRY OF THE SYMPTOMS OF PEPTIC ULCER.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.
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The symptoms of peptic ulcer may cover a wide range, and are not infrequently vague and indefinite. They depend to some extent upon the type of ulcer, its location, and the characteristics of the individual who possesses the ulcer. The symptoms of a peptic ulcer anywhere usually follow in a general way those of a duodenal ulcer. The symptoms of duodenal peptic ulcer may be described under three broad types. In all of them there is a tendency toward latent periods with comparative comfort, followed by an exacerbation of symptoms that occurs more frequently in the spring and the fall.

SYMPTOMS OF PEPTIC ULCER

In the first type, the chief complaint is the so-called hunger pain, coming on two to four hours after meals in duodenal ulcers, and sooner in gastric ulcers. This pain is usually relieved by food, soda, gastric lavage or vomiting. The patient sometimes wakens early in the night with pain, which ceases after taking alkalies or milk and crackers. This condition lasts from six weeks to several months, alternating with periods of comparative freedom from symptoms.

In the second type the prominent symptom is hemorrhage. The patient may apparently be in good health when hemorrhage suddenly occurs, with vomiting of blood and with tarry stools. Tarry stools and anemia may constitute the only symptoms.

In the third type there are no definite gastric symptoms, but discomfort in the lower part of the abdomen and sometimes a tendency toward diarrhea. The appetite is poor and there is loss of weight.

These three types of symptoms of peptic ulcer may occur separately or combined. The first and second are commonly associated.

Though these three types or combinations of types cover most of the cases of peptic ulcer, there are occasional instances in which a peptic ulcer produces very confusing symptoms. For example, Mr. A. K. P., age thirty-four, had a history of having had several previous attacks of what appeared to be kidney colic on the right side accompanied by vomiting. A few hours before admission to St. Elizabeth's Hospital, October 29, 1924, he suffered a very marked attack which began with pain in the upper right side and concentrated around the region of the right kidney. There was slight general abdominal pain and tenderness. The urine was cloudy and contained some albumin and a few leukocytes. Cystoscopic examination was negative. The following day the pain seemed to locate in the right iliac fossa, and his appendix was removed. It was swollen and congested. The tissues around it were edematous, particularly around the mesentery of the cecum and ascending colon. A drainage tube was inserted. The appendix contained some pus. Five days after this operation, duodenal and stomach contents appeared through the drainage tube. There was but little pain or muscle spasm in the epigastric region. On November 6th an incision was made through the inner portion of the upper right rectus muscle. The duodenum anteriorly was slightly adherent and showed a few lymph flakes, but in the posterior wall there was marked infiltration. The pylorus was occluded with a kangaroo tendon and a posterior gastroenterostomy was done. The patient died on November the ninth. Post-mortem examination showed the right kidney floating in foul liquid containing duodenal and stomach contents. There was a large ulcer in the posterior duodenal wall, which had perforated retroperitoneally. The duodenal contents had gravitated around the kidney and in the region of the appendix. The symptoms were at first of kidney colic, and later were the symptoms ordinarily found in appendicitis.

The symptoms of kidney colic and the symptoms of appendicitis can, therefore, be caused by the perforation of a posterior duodenal ulcer.

It is, however, the mimicry of the two conspicuous symptoms of peptic ulcer, hunger pain and hemorrhage, that chiefly concerns us, and

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in order to comprehend the mimicry we must consider the cause of these symptoms in ulcer.

Hunger Pains

Hunger pain in peptic ulcer, particularly in duodenal ulcer, has excited much interest. The work of Cannon and Washburn in 1912 first established definitely that hunger pains in a normal stomach were due to contraction of the gastric muscles. This was ascertained by placing an inflated balloon in the stomach and connecting it by a tube with another balloon emersed in water from which tracings were made on a kymographic drum. The patient indicated when the pains occurred, and they coincided with the contraction on the balloon in the stomach. Carlson and his associates have elaborated this work and confirmed the original findings of Cannon and Washburn.

The so-called pangs of hunger accompanying a contraction of the stomach show alternating periods of quiet and activity. In investigating the pain of peptic ulcer it was assumed that it was probably an exaggeration of the hunger pains which might occur in a normal stomach. There is extensive literature on this subject, much of it contradictory. A. J. Carlson, H. Ginsburg, W. W. Hamburger and others believe that the pain in duodenal ulcer is due to contraction of the gastric muscles, though the contractions are not usually as deep or powerful in patients with ulcer as in the hunger pains in a normal stomach. B. B. Crohn and A. O. Wilensky, W. L. Palmer, and others found that there was no particular gastric contraction in about one-fifth of their patients with peptic ulcer. Reynolds and McClure also found that there was nothing unusual in the gastric and duodenal peristalsis in many of their patients with peptic ulcers. C. W. McClure thinks that as motor abnormalities accompanied pain, and also occurred without pain, both may be due to some common cause. He regards the subject as still indefinite.

It has been shown that when there is unusual contraction of the pyloric portion of the stomach, frequently the duodenum also contracts abnormally. Hunger pains apparently are timed more accurately with contraction of the duodenum or jejunum than with contraction of the stomach, and the tone of the duodenum often rises and falls in coordination with the stomach. Distention of the duodenum is thought by C .M. Jones, of Boston, and others to cause hunger pains.

An interesting observation by Payne and Poulton showed that apparently there are hunger contractions in the esophagus, and this suggests the possibility that at least some of the pain in peptic ulcer is caused by spasm of the esophagus.

The theory of production of pain by excessive acid in the gastric juice has also stimulated much discussion. A few investigators have been able to increase the discomfort of patients who had an active ulcer by introducing dilute hydrochloric acid into the stomach through a tube. Others have found that the introduction of acid in these patients merely produced a mild burning sensation but not the typical so-called hunger pains (Alvarez.) It has been noted, too, that patients with low hydrochloric acid content or even without free acid in the gastric juice have been subject to typical hunger pains.

An important factor has been emphasized by Palmer, who has shown that much depends upon the irritability of the ulcer. Thus, if the duodenal and gastric mucosa is normal, the ingestion of 100 to 200 c.c. of .5 per cent hydrochloric acid causes no symptoms, while symptoms are produced if the ulcer is active, the administration of acid often bringing on a typical attack of pain which is relieved by the usual methods of administration of soda or washing out the stomach. However, in all cases of active ulcer this does not occur, so causation of hunger pain by increased acid does not hold for every case. Ivy has shown that, while normal mucous membrane of the bowel is insensitive to ordinary traumas such as clamping or cutting, when it becomes congested and edematous pinching or cutting causes pain and sometimes vomiting. He believes that the intermittent pain of ulcer is due to changes in tone of the muscles at the site of the ulcer, and is produced by local spasm, while continuous pain is due to congestion or swelling around the ulcer from the inflammation.

The important point in these observations seems to be a lowering of the threshold for the stimuli of pain in the nerve endings of the stomach and duodenum. This increased sensitiveness of the sensory nerves is, of course, a common occurrence where the sensory nerves

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are more abundant, as in the skin. Inflammation in the skin of the hand, for example, will cause even a slight pressure to give pain. So in the stomach or duodenum the inflammation around the ulcer appears to lower the threshold for the stimulation of the sensory nerves; consequently, normal peristalsis without markedly accentuating the local spasm around the ulcer will be painful. In some cases of peptic ulcer acid may not only increase the sensitiveness of the gastric or duodenal sensory nerves which normally are not exposed to acid because they end in the muscular or submucous coats, but may in this condition actually cause pain. If, however, the threshold for painful stimuli is about normal, the spasm and the excessive acid are without painful effect.

It is commonly known that many external lesions follow this general course. The sensitiveness of a callus or corn may vary even though the corn itself remains apparently unchanged. It is known, too, that there are occasional cases in which the gastric mucosa is intact and yet so-called hunger pains supposed to be typical of peptic ulcer occur and are relieved by soda or by emptying the stomach.

In pylorospasm, which, as Hughson has shown, may be caused by irritation anywhere within the peritoneal cavity, there doubtless follows a congestion. If the pylorospasm is excessive and prolonged there may be a hypertrophy of the involved muscle. Hyperemia accompanies increased muscular activity. The hyperemia may accentuate the sensitiveness of the gastric and duodenal nerves even though the mucosa is intact, and the same mechanics of hunger pains would thus occur from pylorospasm as from ulcer. This seems to be the best explanation of the mimicry of hunger pains by extragastric lesions.

Doubtless the tug of a duodenum on an adherent gall-bladder causes irritation of the duodenum and pain by the pull of the gall-bladder, which in its turn may also produce pylorospasm. The duodenum has a rather limited range of motion and any interference with this range is more likely to be resented and to produce symptoms than where the range of motion is free and meets with but little impediment. In the transverse colon or in the jejunum and ileum, adhesions that do not produce obstruction usually give no symptoms, but adhesions about the pylorus or duodenum or about the ileo-colic sphincter, where motion though essential is more limited, will often give discomfort or pain. In the same manner adhesions about the heart where the motion is essential but limited may produce marked symptoms.

Hunger Pains From Extra-Gastric Causes

Dr. W. H. Higgins, of the Medical Department of St. Elizabeth's Hospital, Richmond, Va., in an excellent paper on hunger pains, reviews 162 consecutive abdominal operations at St. Elizabeth's Hospital in which there seemed to be some symptoms of disturbed digestion. His analysis is as follows:

"In order to determine the relative frequency of this symptom (of hunger pain or food relief) in the more common abdominal diseases, an analysis of 162 clinical histories has been completed. This record comprises all patients with peptic ulcer, chronic cholecystitis and chronic appendicitis operated on at St. Elizabeth's Hospital over a given period. For obvious reasons, it does not include any patients with this diagnosis in whom the condition was accidentally found during a laparotomy for other pathologic changes.

"This series consists of thirty-three cases of chronic cholecystitis, forty-seven of chronic appendicitis, thirty-four of a combined chronic cholecystitis and appendicitis, and forty-six of peptic ulcer. In the clinical questionnaire used at this hospital, the specific inquiry concerning food relief is made and the reply of every patient is recorded. The character of pain complained of varied as widely as that usually found in a corresponding number of patients suffering from uncomplicated duodenal or gastric ulcers. In every instance a minute post-operative note has been made stating in detail the extent of the pathologic changes present as well as a notation on the condition of the other abdominal organs.

"In the first group there were thirty-three cases of chronic cholecystitis. Of these, five, or 15.4 per cent, gave a definite history of food relief.

"In the second group there were forty-seven cases of chronic appendicitis. Of these, seven, or 17.5 per cent, showed food relief.

"In the third group there were thirty-four cases of combined chronic cholecystitis and chronic appendicitis. Three, or 8.6 per cent, gave a history of food relief.

"In the fourth group there were forty-six

cases of peptic ulcer. Of these, twenty-one . . . gave a history of food relief.

"The interesting feature of this summary is the relative frequency of hunger pains in gall-bladder, appendical and duodenal infections. Relief of pain by ingestion of food has been generally recognized as a cardinal symptom of duodenal ulcer, and has served as one of the most important differential points in the diagnosis of this condition. It is rather remarkable that slightly less than one-half of the ulcer cases in our series gave this history. We may assume from this low percentage that a duodenal lesion alone is not the sole provocative factor, and it becomes more apparent when we find the same symptoms in from 8 to 17 per cent of our chronic gall-bladder and appendical cases.

"The age of the patient, duration of the illness, percentage of hydrochloric acid or roentgenologic studies apparently bore no relation to the incidence of this complaint."

It is obvious that the symptom of hunger pain is not solely due to peptic ulcer, and that peptic ulcer does not always cause hunger pains. In this series, 45.6 per cent of our cases of peptic ulcer had hunger pains while this symptom was present in 15.4 per cent of patients with cholecystitis and in 17.5 per cent of cases with appendicitis. There was also a marked difference in cases with adhesions and without adhesions. Of the cases of cholecystitis with adhesions 22.7 per cent had hunger pains, and all of the cases of cholecystitis with a history of hunger pains had adhesions. Adhesions apparently predispose to hunger pains in cholecystitis.

Gastro-Intestinal Hemorrhage Not Due to Peptic Ulcer

The mimicry of the symptoms of hemorrhage from a gastric or duodenal ulcer is not infrequent. When blood appears in the stomach or gastro-intestinal tract, there are many sources from which it may come. There may be toxic erosions, as occur after burns. Rosenow has shown that injections of certain strains of streptococci often cause erosions or ulcerations of the duodenal mucosa of the rabbit. Certain chemicals or irritating foods may produce gastric or duodenal erosions. The congestion of the gastric veins from enlargement of the spleen or from hepatic cirrhosis and the large varicose veins around the cardiac portion of the stomach and the terminal esophagus are frequent sources of hemorrhage.

An unusual case of hemorrhage occurred in a patient of mine (Mrs. K. W.) who gave a history of blood in the stools at intervals for several years before admission to the hospital. She became extremely weak, and vomited a great deal though she did not vomit blood. She had been given a blood transfusion, and placed on a milk diet, but without benefit. Physical examination was essentially negative, and gastro-intestinal roentgenologic studies were negative. Laboratory examination showed an extreme degree of secondary anemia and a low leukocyte count. A tentative diagnosis was made of duodenal ulcer. At operation, February 20, 1928, the stomach and duodenum were normal. At the hepatic flexure of the transverse colon was a flat mass, which was also attached to the jejunum. It was extremely vascular. A part of the jejunum and a part of the transverse colon were resected, and the patient made a satisfactory recovery. The tumor was a vascular, degenerating neurofibroma, arising from the transverse mesocolon. The growth had invaded the upper jejunum at one small point, which was the source of the hemorrhage.

Other Symptoms of "Indigestion"

The other symptoms commonly associated with peptic ulcer are less conspicuous. They consist chiefly of gaseous eructations, nausea with occasional vomiting, and so-called water-brash or heartburn. These are probably from an upset of the motor mechanism of the stomach and intestines, which is really the cause of the great majority of all gastric symptoms. Alvarez, Klein and others have shown that most of the gastric and intestinal peristalsis is due to what Alvarez terms a gradient movement. The stimulus for peristalsis of the stomach arises from the lesser curvature. The rate of contraction at the point of origin of peristalsis in the lesser curvature near the esophagus is distinctly faster than on the greater curvature about the pylorus. Similarly, it is greater in the upper jejunum, being 20 per minute, than in the lower ileum where it is about 11 per minute. Things that tend to upset this mechanism, such as irritation where the rate of contraction is normally low, or depression where it is normally high, may interfere with peristalsis to such an extent as actually to reverse the peristaltic current.

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Reversed ripples of peristalsis appear to coincide with nausea and, if marked, vomiting may occur. If there is irritation about the pylorus, the reversed gastric peristalsis may cause regurgitation into the esophagus of the gastric contents and produce symptoms of waterbrash and heartburn. This does not necessarily mean that there is an excess of hydrochloric acid in the gastric juice, but merely that it is present in a region physiologically unaccustomed to the acid. It has been shown that in patients who suffer from heartburn or waterbrash a small sponge introduced into the esophagus and left for a few minutes will, when withdrawn, often show an acid reaction, whereas normally the reaction in this region should be alkaline.

These symptoms of regurgitation, eructation, heartburn and nausea may be produced by the irritation from a gastric or duodenal lesion such as a peptic ulcer at the pyloric end of the stomach or in the duodenum, or they may arise from extra-gastric causes which induce pylorospasm. They may also be due to toxic materials such as products from acute infectious diseases, which tend to weaken the more rapidly contracting sensitive muscles of the upper portion of the stomach and duodenum, while the more hardy muscle which contracts slowly is but slightly, if at all, affected.

Pylorospasm

The work of Walter Hughson on pylorospasm is interesting. In his experiments on dogs he has shown that there is a tendency to pyloric spasm following an injury to the peritoneum. It is a reflex spasm and the paths of the reflex arc are through the vagus nerve. After inducing the spasm and delayed emptying of the stomach in dogs by creating a lesion in the cecum, he has then caused normal emptying in these animals by resecting the vagus nerve, and finds that removing the branches of the vagus about the middle of the stomach has the same effect as when the nerve is severed immediately on entering the stomach. Not infrequently, according to Hughson, an intensely irritable stomach without a gastric lesion may be relieved by section of the gastric branches of the vagus. In several patients with marked gastric symptoms I have done this after removing the apparent cause of irritation, as a diseased gall-bladder or appendix, and in most of them there has been relief.

As Hughson has pointed out pylorospasm may be induced by a lesion anywhere in the peritoneal cavity. Probably the most common source for such a reflex is the appendix. While many appendices doubtless have been removed without benefit there still remains a definite though small percentage of patients in whom hunger pains and gastric distress form the chief clinical symptoms of appendicitis. The following case illustrates this condition:

Mr. C. B. J., single, age 28, had "stomach trouble" which began about ten years ago. At first the symptoms were loss of appetite and dull epigastric pain with no particular relation to meals. There was decrease in weight. He was given an ulcer diet, with some relief for about a year. Then the epigastric pain became more pronounced, began when the stomach was empty and was usually somewhat relieved by food and alkalies. There was occasional nausea, and a considerable amount of gas. There had been at times slight tenderness in the region of the appendix. The laboratory examinations were negative except for low free hydrochloric acid in the gastric juice, and low total acidity. Roentgenologic examination showed what appeared to be a pylorospasm with a possibility of duodenal ulcer, and definite disease of the appendix. At operation, February 4, 1929, there was no evidence of an ulcer, or of a healed ulcer, either in the duodenum or in the stomach. There was marked pylorospasm, and most of the branches of the gastric vagus nerve were resected. There was a definite chronic appendicitis, and the appendix was removed. The patient made a satisfactory recovery and, when last heard from, three months after the operation, he was symptom-free.

According to Alvarez, there is a reflex connection between the emptying of the lower ileum and the relaxation of the pyloric sphincter. He says, "Just as an emptying of the stomach tends to produce an emptying of the lower ileum into the cecum, so it appears that an early emptying of the ileum may favor an early emptying of the stomach and a slow emptying of the ileum may slow the emptying of the stomach. Considerable experimental work has been done on this subject by Hedblom and Cannon and later by White. They found that in cats they could slow the progress of food through the stomach and small intestines if they irritated the cecum sufficiently with

croton oil. Mild degrees of irritation produce no effect on the emptying of the stomach. Similarly in man much depends on the degree of irritation produced by the lesion, upon the stage in which we find the disease and upon the original stability of the gradient in a particular individual."

The following two cases, from many of this kind that I have had, illustrate the relation between gastric symptoms and extra-gastric lesions.

Mr. M. E. L., age twenty-five, gave a history of "gas on the stomach," dull pain and burning in the epigastrium at intervals, particularly evident about an hour or two after eating. There was no nausea or vomiting. The symptoms had been present about eighteen months. He had lost twenty-five pounds in weight during the past year. There was for a time some improvement on diet, but the symptoms returned and were more severe than ever. Physical examination showed the patient considerably underweight, but the examination was otherwise practically negative. Laboratory examination showed moderate secondary anemia, and was otherwise negative. Roentgenologic examination showed marked hyperperistalsis of the stomach, and a defect near the junction of the first and second parts of the duodenum suggestive of ulcer. A diagnosis was made of duodenal ulcer and secondary anemia. At operation on August 11, 1928, the stomach and first portion of the duodenum showed no lesion. About three inches from the pylorus there was a sharp adhesion to the gall-bladder which pulled the duodenum upward. The gall-bladder and appendix were removed. Both gall-bladder and appendix showed chronic inflammatory changes.

Mr. L. R. G., age twenty-three, was admitted to the hospital as an emergency case with a history of rather sharp pain in the epigastrium beginning six hours before admission. The pain radiated slightly to the right lower quadrant. He was nauseated. There was a history of "indigestion" for a number of years with hunger pains and occasional nausea. He was thought to have peptic ulcer. Physical examination on admission showed the lower right rectus muscle spastic. There was tenderness just to the right and below the umbilicus. The leukocyte count was 10,000, with 90 per cent polymorphonuclears. At operation, April 6, 1929, there was a hernia of the ileum under a congenital band which was the mesentery to a rather large Meckel's diverticulum. The appendix was acutely inflamed. No evidence of peptic ulcer could be found.

Conclusion

The symptoms of peptic ulcer are often simulated by other lesions, and occasionally the mimicry may be very confusing. The cardinal symptoms, hunger pain and hemorrhage, are, however, usually associated with other evidence that may lead to a correct diagnosis. In the atypical cases of peptic ulcer in which both hunger pain and hemorrhage are absent, and in cases simulating peptic ulcer, the diagnosis may be extremely perplexing and will require the combination of a careful clinical observation, a thorough laboratory study, and a competent roentgenologic examination, in order to determine the facts.

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617 *West Grace Street.*

THE FASCIAL SUTURE REPAIR IN HERNIA OPERATIONS.*

By E. OSMUN BARR, M. D., Washington, D. C.

This particular type of operation for herniae repair is designated as a fascia repair because fascial strips are used as suture material in the operative procedure. The method was devised by Gallie, of Toronto, a professor of surgery in one of the Canadian Medical Schools. Repair by fascia used as suture material is not a new operation for hernia, but this particular method was devised by Gallie after a study in animal transplants of fascia in an attempt to produce a repair that would give a firm, viable support to a weakened area, thus lessening the chance for future recurrences.

Description: The description is best approached by using the inguinal hernia as an example. The usual oblique incision for hernia is made, the subcutaneous tissues divided and separated, the aponeurosis incised and opened down through the external abdominal ring. The cremaster muscle is incised, the sac and spermatic cord are exposed. The sac is freed and doubly ligated about its neck, the redundant portion of the sac is excised and the stump of the neck allowed to snap back into the abdominal cavity. Next, the cardinal sutures of forty day chromic catgut (No. 2) are inserted, approximating for transversalis and internal oblique muscles to the shelving border of Poupart's ligament under the elevated cord.

While the surgeon is following out this procedure, his first assistant makes a linear incision along the lateral aspect of the thigh. The thigh opposite the site of operation is usually chosen for convenience in operation. The linear incision extends twenty-five or thirty cm. along the thigh, the subcutaneous tissue is separated and the tensor fascia lata is exposed, from which strips of fascia are removed for suture material. The surface of the fascia lata should be cleaned thoroughly of subcutaneous fat and its glistening fibers shorn clean of all areolar tissue. This is quite essential for two reasons, namely, (1) to permit free passage of the fascial strip when it is used as a suture, and (2) for the prevention of infection.

Three strips of fascia are obtained from the exposed fascia lata, and, if a strip of fascia is removed with fat and tissue particles adherent to its surface, difficulty will be experienced in using it as a suture. When the strip is drawn through the muscle and the ligament, mechanical obstruction will be produced by the resistant tissues to the protruding pieces of areolar tissue on the fascial strip. This will cause an attempt to force the strip through the resistant tissue by too brisk a pull which tends to break the fascia and to produce a hiatus in the muscle and ligament which might cause a new weakness in that region. Thus, a clean strip of fascia is essential for a nice surgical procedure.

Again, if fat is allowed to remain on the strip, necrosis develops in that fat which offers a frugal field for the growth and development of pathogenic bacteria to involve the transplanted fascia and cause subsequent sloughing of the material, destroying not only the fascial repair but the reasonable chance of obtaining a cure. Therefore, it is necessary that this detail be carefully watched and clear strips obtained.

Usually three strips of fascia are removed, each strip measuring one cm. wide, and twenty cm. long. The strip is threaded in a McArthur needle, or any needle with a large eye, in one of two methods: (1) The end of the strip is drawn through the eye and anchored securely to the main portion of the strip with a fine chromic transfixation stitch; or (2) by drawing the free end through the eye, out beyond the point of the needle, passing the needle point through the fascia strip, looping the threaded end back around the needle eye and locking it with a transfixation stitch of fine chromic. The chief purpose, in any event, is to get a firm anchorage of the threaded fascia in the needle. The unthreaded or distal end of the strip is tied tightly with a transfixation stitch of 00 chromic catgut to prevent the fraying of the fibers. These threaded strips are placed in a warm normal saline solution and kept moistened until they are used.

This procedure of obtaining and threading the fascial strips has been carried on while the surgeon has been following the usual method

*Read before the District of Columbia Medical Society.

of repair in approximating the muscle and the shelving border of Poupart's ligament with the chromic catgut. The cardinal sutures of chromic catgut having been taken and tied firmly, the fascial suture is introduced in the operative procedure at this point. With the fascial strip as suture material, reenforcing stitches are taken along the line of chromic catgut which was used in bringing the muscle and ligament together. The strip is anchored in the internal oblique or the lateral border of the rectus with a stitch of 00 chromic, and then a running stitch is taken in the conjoined tendon, Poupart's ligament and the muscle alternately. The fascial stitch is anchored in its course through the muscles and ligament with transfixation stitches of fine chromic catgut. In such a manner the strips are transplanted and anchored in the muscle and ligament which play a part in the repair, and in a similar manner these strips may be transplanted in any type of hernial repair. The further steps in the procedure are the usual routine steps taken in the closure of any incision for the repair of herniae. It is not necessary to draw the fascia tightly, as Gallie states that "investigation showed that the solidity of the union of the transplanted fascia to the edges of the gap depended upon the extent to which the former was woven into the latter. If the transplant passed only once or twice through the fascial margins, it usually failed to prevent the edges of the gap from stretching apart. If it is well woven into the edges, however, no separation occurred. The strength of the union also depended on the care with which the portion of fascia was cleared of areolar tissue. Actual scraping and scarification of this part of the transplant produced the best results."

In regard to the tensor fascia lata from which the strips were obtained, interrupted sutures of No. 0 or No. 1 chromic catgut are used to bring the separated edges together and reduce the muscle which tends to bulge through the opening. A continuous stitch of fine chromic catgut is used to close the subcutaneous tissues, and the skin is closed with interrupted or continuous stitches of fine chromic, silk or horse hair. The wound is dressed on the third day and the stitches removed on the fifth day.

Indications for Operation: (1) Ventral herniae of the type which occur in large, obese individuals as result of a previous operation with subsequent loss of support of the abdominal muscles, which is frequently seen in cases with a history of infection and prolonged drainage through the wound following the operation.

(2) In umbilical herniae in individuals with flabby, poorly developed abdominal muscle support, the fascial transplant is useful in forming a re-enforced repair.

(3) Inguinal herniae in which recurrence is a tendency that is hard to overcome. Generally speaking, this procedure is not necessary in the indirect type of hernia because this responds well to the Bassini repair or any of its modifications. However, there are those inguinal herniae which protrude into the scrotum with a massive sac which would be well treated with an insurance of a high factor of permanent repair if the fascial transplant were used. In dealing with the direct hernia where cure is harder to effect and recurrence is a common complication, the radical attempt at repair is surely indicated with a fascial suture used after the method of Gallie. Direct inguinal herniae are real indications for Gallie repair.

(4) Openings other than herniae where the parietal peritoneum cannot be approximated because of destruction, fascial strips are indicated and useful when they are weaved or matted together to form the closure and support of the hiatus thus produced.

Complications: Here, mention is made only of those complications which have a direct bearing on the repair with fascial strips. (1) Infection is a very serious complication because it attacks the fascial transplant, causing necrosis and sloughing of a large portion of the strips through the draining wound. Particular care should be taken to avoid contamination from any source in this operation and prevent this complication. (2) Herniation of the muscle through the tensor fascia lata is a complication which has not been seen in fifteen cases but is a skeptical question with which critics of the operation approach the value of the fascial suture. In closing the opening in the fascia with interrupted sutures there is little danger of any sutures breaking and permitting a reseparation of the edges, as the strain is not great and the activity of the thigh is limited by the patient's confinement. Thus, the real complication which is to be guarded

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against, which affects the operative result, and which attacks the transplanted fascial strip, making it slough before the other structures are involved is infection. Avoid this local complication and one of the surest steps in affecting a cure of a recurrent or any difficult type of hernia has been made.

Results: An attempt has been made to choose cases from the fifteen cases treated that represent the typical ones as mentioned under "Indications." This embraces one recurrent ventral, one umbilical in a very large and obese woman, two recurrent direct inguinal herniae, and one indirect inguinal with protruding sac into scrotum of a fat Italian vendor.

A follow up study of these cases shows a good report, after a period of twelve or more months following the operation. All cases treated by this method have remained cured with one exception. This was in the case of the ventral hernia occurring in an old gall-bladder scar.

Cholecystectomy was done with a complicating infection, necessitating drainage. A ventral hernia was the result in a man of large and obese structure. Fascial repair was attempted, and infection of the wound occurred with sloughing of the fascial strips. While hernia did not recur, this case is carried in the records as improved in a twelve months' follow up.

These results are in cases of a difficult type to effect a cure, and a close follow up is being kept on them.

Conclusions: The fascial transplant is a useful method in dealing with those herniae which demand something more than a customary repair. The fascial transplant re-enforces the usual repair with a tissue suture whose tensile strength depends upon its viability. Gallie and Lemesurier, *C. M. A. J.*, 1921, state: "In all the specimens examined the fibres and cells had remained unchanged, and, beyond the transient edema of the first three weeks, showed no evidence of inflammatory reaction," with no evidence of stretching or contracture of the suture itself, and the "strips of human fascia lata, which is the material used by the authors in surgical operations, are stronger than the stoutest kangaroo tendon. Destruction of the normal blood supply and transplantation to another position in the body appears to have no effect on the strength of the suture." This tends to prove that the fascial suture becomes intimately healed to the surrounding structures, retains its resiliency and strength and actually enhances the resistance and durability of the repaired site by re-enforcing the weakness and by supporting the structural repair with a viableness and a tenacity that is found in the fascia of the tensor fascia lata, therefore, making this method a useful means of repairing difficult conditions of herniae.

815 *Connecticut Avenue.*

BUTTER IN PSORIASIS.*

By A. B. GRUBB, M. D., Cripple Creek, Va.

Psoriasis is a chronic disease of the skin. It is characterized by silvery white scales or grayish white scales which are usually very abundant.

While this disease of the skin is found in those of apparently good physical condition, yet Stelwagon and others say that it is generally found in those of poor health and enfeebled constitutions. Stelwagon also says that it is more common in winter than in summer. Many of the lighter cases even disappear in summer only to reappear the ensuing winter, especially the latter part of the winter.

It is a well known fact that most of the people of the poorer class have but little butter toward the end of winter, while many of this same class have none at all. This may account for the disease being more prevalent during the end of winter seasons.

Xerophthalmia has been successfully treated by feeding butter, and I have seen a few cases of the disease which we used to diagnose trachoma respond to butter. These cases, I believe, are also more prevalent at the end of winter while many of the milder cases were no doubt in part classed as "Vernal Conjunctivitis."

There is perhaps an analogy between xerophthalmia and psoriasis, one being a dry scaly skin while the other is a dry conjunctiva and cornea.

Schamberg, a few years ago, was convinced that a high protein diet was one of the causes of psoriasis, and the Mayo Clinic has reported improvement in only part of their cases by diminishing proteins.

McCarty, of Washington, D. C., reports the successful treatment of seven stubborn cases by the intravenous use of a German preparation

*Read by title at the meeting of the Southwestern Virginia Medical Society in Pulaski, March 25 and 26, 1929.

known as ektobrom which was accompanied by olive oil used locally. Possibly olive oil alone might be of use internally or externally since it is a vegetable fat which contains the same vitamine as butter.

Case Reports

Case 1.—N. W., a girl of about seventeen years of age was covered with scales. She was given Fowler's solution, and various other drugs, but with no improvement. Later she moved from her cabin in the mountains to a large farm where she had plenty of milk and butter. She was soon well, and has continued to be so for eighteen years with the exception of a few scales which appear on her elbows during her nursing periods. During these past eighteeen years she has had a very fair diet of animal fats both winter and summer.

Case 2.—H. B., a man of about twenty-five. His history showed that he had had but little proteins and practically no butter. He was placed on Fowler's solution and a balanced ration, which, of course, included butter, and within a few weeks he was well.

Case 3.—J. M., a man of about thirty who had had a very stubborn case all winter. The scales covered about one-eight or more of his body. These scales were very dry and crusty and bled over his joints. Inquiry as to his past diet showed that he had not eaten any butter the whole winter, and not very much fats of any kind. His diet was mostly carbohydrates. He was given no therapy except butter, and was about well within two or three weeks, and has been well ever since. Although butter was hard for him to get during the past winter, he had plenty of fat meats.

Case 4.—Child four years of age. This child was fat and apparently well nourished, but its diet was mostly carbohydrates. Only a few scales were on the child. These disappeared after feeding the child about two weeks on butter, and in this case fat meats were given since butter was hard for the family to obtain.

Although I have only four cases to report, yet the remedy is so simple that I am sure no harm will be done and much good may result from the "butter treatment" of patients suffering with psoriasis.

Two later reports:

W. J., a fourteen year old boy was seen April 19, 1929. He has had mitral regurgitation for five years and nearly his whole body was covered with the characteristic scales of psoriasis on a red base.

He had not eaten any butter the whole winter, but had had some milk and cream in his coffee, but not in the right quantity.

He ate most of eight pounds of butter from April 19th, until about May 10th. Improvement was noticeable almost from the first. During the first week he began to"shed" his scales, and later the red base became a brown and copper color, and by the end of two months all signs of the condition were gone. The family now has two cows and I do not anticipate a return of his condition.

G. F., a man of about forty was interviewed, who has had psoriasis off and on for nearly twenty years. He has discovered that potatoes with butter cured his condition and he now uses it as a preventive.

TORSION OF THE SPERMATIC CORD.*

By WM. D. GOODMAN, M. D., Washington, D. C.

A review of the literature shows that torsion of the spermatic cord is rare, and seldom diagnosed before operation. Of the thirty-two cases reported, seventeen occurred on the right side, fifteen on the left. Seventy-five per cent occurred in patients under twenty-three, at an age mainly when the individual is most exposed to traumatism.

The exact etiology is really a matter of speculation. The only evident predisposing cause is mal-position of the testicle, either retained in the inguinal canal, or an extremely long mesorchium. The trouble is usually attributed to nothing more violent than some indefinite strain. Most cases give histories of recurrent attacks before strangulation. In the latter case, it may be brought about by some peculiar movement of the body causing the cord to twist the testicle within a loose vaginal sheath. Another factor may be an anomalous arrangement of the muscle bundles in the cremaster.

The symptoms may resemble a strangulated omentum, but usually strangulated hernia. In a typical case there is pain, swelling, tenderness and vomiting, but, unlike strangulated hernia, there is fever and no intestinal obstruction. It may also simulate closely the symptoms of an acute epididymitis.

In diagnosing this condition the history is

*Read before a Staff meeting at the Emergency Hospital, Washington, D. C.

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very important. Palpation may disclose the twisted cord, and in some cases the patient makes the diagnosis himself before he is seen by a physician.

The treatment is an immediate exploratory incision, untwisting the cord, and anchoring the testicle to the dartos of the scrotum. A gangrenous testicle should be removed with the cord up to the internal inguinal ring. Whether the testicle should, or should not, be removed is a matter of keen surgical judgment at the time of operation. If, on the application of hot saline solution, a close scrutiny shows evidence of viability, we should be content to fix the cord and testicle in their proper position, and leave them intact.

The following is a case which came under my observation about eight months ago:

R. S., eighteen years old, family history, negative. Past history, three years ago he was injured in the perineum while playing leapfrog. Two months after this injury, he had an attack of pain in the left side of the scrotum, with some swelling and tenderness about the left testicle, most marked just above the epididymis. There was no nausea, vomiting, or fever during this attack. Patient says he relieved the condition by massaging and untwisting the cord.

The second attack occurred about one month later, with the identical symptoms and again he relieved himself. Then there was an interval of two and one-half years before another attack. This time the condition relieved itself without his help.

Two months later he had another attack, about 1:00 A. M., which was very severe and could not be relieved. There was nausea, vomiting, elevation of temperature, swelling and tenderness of the left testicle. He came to me twelve hours after the onset of this attack and diagnosis was made of torsion of the cord by palpation and history of the case.

Operation was performed immediately and I found the cord to be twisted upon itself three and one-half times mesially. Relieving the torsion and applying hot saline to the cord and testicle, it seemed viable, and I deemed it advisable to treat conservatively, anchoring the testicle to the dartos, sewing up and inserting a small cigarette drain. Recovery was uneventful.

Patient was seen two months ago, that is, five months after the operation and I find there is some strophy of the affected testicle.

Remarks

This case is very interesting because of its typical textbook picture with a history of four attacks over a period of three years, the first attack following traumatism in the perineum. It is also worthy of note that the patient instinctively relieved his own condition.

The main point to be emphasized is the necessity of an early diagnosis, with immediate operative interference to relieve the strangulation. After twenty-four hours of strangulation, the chances are that the testicle will probably be gangrenous, when a radical operation will be necessary.

The Farragut Apartment—
Seventeenth and Eye Streets, Northwest.

SPINAL ANAESTHESIA—EXPERIENCES WITH NEW AND IMPROVED TECHNIQUE.*

By HARRY HUDNALL WARE, Jr., M. D., Richmond, Va.

The purpose of this paper is to increase interest in spinal anaesthesia, and to present a simple technique developed from observation of more than five hundred cases. The technique to be proposed is essentially that of Labat and Cosgrove, with several modifications.

Spinal anaesthesia, like many other great discoveries, resulted from an accident. Apparently the first reported case was produced by J. Leonard Corning, of New York City, in 1885, while giving a supposed therapeutic extra-spinal injection of cocaine.

Bier, of Bonn, in 1889, introduced spinal anaesthesia as a definite procedure. The name spinal anaesthesia, is really a misnomer as it is more of a regional nerve block. During recent years, Allen, Babcock, Labat, Barker, Cosgrove, and others have developed the technique, so that it is today one of the safest methods of anaesthesia. While not universally adopted in the United States, it is used frequently in several large hospitals distributed in all sections of the country, and has a much more extensive use in the European Clinics.

Many authors advocate the use of spinal anaesthesia in upper abdominal surgery. Our experience is limited entirely to surgery of the abdomen at or below the level of the umbilicus. It is especially satisfactory in gyneco-

*Read before the Richmond Academy of Medicine, May 28, 1929.

logical and obstetrical operations. Our intraspinal injections have all been at, or below, the second lumbar interspace.

Spinal anaesthesia has a definite place among the anaesthetics, but is not offered as the anaesthesia of choice for all cases, and it must be employed with discretion.

The indications for its use are determined by:

1. The surgical condition present;
2. The site of the operative field;
3. The age of the patient;
4. The mental and emotional state of the patient;
5. Acute and chronic pulmonary and cardiac conditions;
6. Nephritis, pyelitis, diabetes, and toxemias.

Spinal anaesthesia causes less metabolic and protoplasmic disturbance than any other form of anaesthesia in use at the present time. There is slight, if any, change in respiration, and no irritation of the pulmonary system, decreasing the incidence of acute post-operative respiratory involvement. There is also an absence of cardiac, hepatic, and renal irritation, minimal penetration of shock impulses to the cerebral cortex, and lessened bleeding during operation.

The contra-indications may be summarized as follows:

1. Any marked involvement of the cerebrospinal nervous system, such as brain tumors, cord tumors, intra-cranial, or intra-spinal hemorrhage, syphilis, and meningitis.

2. Mechanical obstruction or limitation of the respiratory space (pulmonary tuberculosis not included except in the latter stage with extensive bilateral involvement.)

3. Extremely depressed patients, or those in a state of traumatic shock.

4. Septicemic cases with positive blood cultures, because of the danger of breaking down the protective barrier between the infected blood and the nerve centers; for the same reason, tuberculosis of the spine—either acute or healed lesions.

5. Infection or suppuration at the site of the puncture.

6. Hypotension is a debatable contra-indication. Our procedure is to consider hypotension a contra-indication only when the systolic blood pressure is below one hundred m.m. of mercury.

Advantages:

To sum up the advantages of spinal anaesthesia, some of which have previously been discussed we have:

1. Rapidity of induction of anaesthesia—usually less than five minutes after spinal injection.

2. Complete analgesia with entire relaxation of skeletal muscle in the anaesthetized field, reducing the incidence of trauma and lacerations.

3. Preservation of tone of visceral muscle, reducing the hemorrhage during operation.

4. Reduction of shock impulses to cerebral cortex.

5. Absence of pulmonary irritation—of particular value in acute and chronic respiratory infections, and asthma.

6. Absence of cardiac irritation.

7. Absence of hepatic irritation.

8. Absence of renal irritation—of especial value in acute and chronic nephritis, pyelitis, and toxemias.

9. The intestines are stimulated, and the sphincters are relaxed.

10. The patient is conscious and does not have to dread going to sleep.

11. Food and fluids may be taken until the time of operation, and immediately afterward, unless contra-indicated by the type of operation.

12. Post-operative nausea, vomiting, and distention are decereased. Paralytic ileus is much more rare following spinal anaesthesia than general anaesthesia.

Disadvantages:

The disadvantages of spinal anaesthesia are:

1. Drop in blood pressure, which can usually be avoided by the proper pre-operative medication and stimulation during operations.

2. Occasionally severe headaches follow spinal anaesthesia. They disappear spontaneously in a few days. Headache can be avoided by careful technique and the use of a small spinal needle to prevent tears of the dura and the loss of excess spinal fluid.

3. The patient is conscious, making it undesirable in neurotic and psychic cases.

4. The duration of the anaesthesia is limited. It cannot be relied upon for more than forty-five minutes, but often there is complete relaxation for more than sixty minutes. When it is necessary to supplement the spinal anaes-

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thesia with a general anaesthesia very little general anaesthesia is needed.

5. Rarely transient paralysis or paresthesia lasting several weeks. This can be avoided by care in selecting the proper needle and making the puncture.

6. Injection of foreign material into the spinal canal with accompanying danger of infection; this is reduced to a minimum by using novocain crystals dissolved in spinal fluid.

Important points and procedure:

The routine recording of the patient's blood pressure, pulse and respiration on admission and with each medication is essential, along with a complete history and physical examination. We have found that blood pressure varies considerably, due to various drugs used, and to the mental state of the patient.

Our pre-operative routine is as follows:

The spinal anaesthesia is discussed with the patient, and its advantages are pointed out. This quiets the patient and allays the fear of the operation.

The night before operation the patient is given ephedrine sulphate, gr. 1, orally.

Two and one-half hours before operation, morphine sulphate gr. 1/6.

Thirty minutes before operation: Morphine sulphate gr. 1/6. Atropine sulphate gr. 1/150. Ephedrine sulphate grs. ¾ (1 Amp.)

Immediately after the spinal injection: Ephedrine sulphate gr. ¾ (1 Amp.)

Fluids may be administered to the patient in small quantities until the time of operation, unless contra-indicated by type of same. A cup of hot coffee is especially beneficial.

The patient should not have an enema within three hours of the time of operation. The patient's eyes should be covered with a pair of dark glasses before he is sent to the operating room. Excitement and noise in the operating room must be reduced to a minimum.

Items for Spinal Anaesthesia:

Novocain solution 0.05 per cent. 5 c.c. for local infiltration of skin and interspinous ligament.

Novocain crystals, 100 mg., in sterile sealed glass ampules (Metz & Co.)

Ephedrine sulphate, 2 ampules, 1 c.c. (¾ gr.) each.

Caffeine sodio-benzoate, 1 ampule, gr. 3 or 4.

Adrenalin solution (1-1000), 1 c.c.

Tincture of iodine, 5 per cent. 1 ounce for preparing field.

Alcohol, 70 per cent. 1 ounce for preparing field.

Two (2) spinal needles (rustless steel). Quincke model. B. D. Special:

One 3-inch—20 gauge.

One 3½-inch—20 gauge.

Two (2) hypodermic needles (rustless steel):

One 1-inch—23 gauge for infiltrating skin and interspinous ligament.

One 1½-inch—20 gauge, for mixing spinal fluid and novocain crystals.

One syringe (glass) 5 c.c. for infiltrating skin.

One syringe (glass) 2 c.c. for mixing and injecting novocaine.

One small metal file.

The needles should be made of rustless steel, and those for local infiltrations should be 23 or 25 gauge. The spinal needle should have a small caliber, 20 or 22 gauge, and the bevel should be 45°. The smaller the caliber, the less trauma to the tissue and loss of spinal fluid, and the less post-operative backache and headache. The syringes should be of an all glass type, preferably having some locking device such as Luer Lox, but this is not absolutely neccesary.

Care must be exercised while giving the spinal injection, because of the danger of removing the spinal needle from the spinal canal. If the needle is in the canal, the spinal fluid flows back in the syringe easily when the piston is withdrawn gently.

To prevent shock and mimimize the drop in blood pressure, the pre-operative medication should be carried out carefully, and the operating room nurse should keep ready for use:

One syringe containing 1 c.c. (¾ gr.) ephedrine;

One syringe contining 1 c.c. of adrenalin solution (1-1000);

One syringe containing 1 c.c. of caffein sodio-benzoate.

As in all modern operating rooms, an intravenous outfit and warm physiological saline solution should be ready for immediate use in case of necessity.

In our series of cases, which we will report in detail later, we have not considered it necessary to resort to intravenous saline during the operation in any instance.

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Posture

The patient is turned on his left side, lateral prone posture, with legs, thighs, and head well flexed. The more convex the curvature of the dorsal surface of the spine, the more easily the needle may be introduced in the spinal canal. This posture can be attained with more ease by having an assistant to steady and help the patient. It is necessary that the transverse plane of the patient's back be perpendicular to the operating table. The shoulders and hips should be in a parallel plane and the patient's back close to the edge of the table.

With the patient in position, the skin over a wide area—6th thoracic vertebrae to sacrum —is painted with 5 per cent iodine solution. After drying, this is removed with 70 per cent alcohol, and the field draped with four sterile towels.

The spinal column is outlined and the crest of the ilium is identified. A line joining the crests of the ilium will usually pass over the fourth lumbar spine and the interspace will be found just below this. With this as a landmark, the space for the puncture can be selected.

Injection

Wth a 5 cc.. syringe, small needle, and 0.05 per cent solution of novocain, a skin wheal is in'ltrated over the interspace selected. The needle is introduced deeper and the area down through the interspinous ligament is anaesthetized. Usually from 2 to 3 c.c. of the novocain solution is used.

The spinal needle (usually 20 gauge—3-inch —Quincke needle), with stylet in place, is next introduced in the wheal over the interspace. The needle should be introduced perpendicularly to both the longitudinal and transverse planes of the spine at the level of the injection. When the dura is punctured, there is a slight snap (recognized with experience) and the needle encounters less resistance. Avoid having the needle to pierce the opposite side of the canal, or come in contact with the opposite side of the vertebrae.

When the dura has been entered, the stylet is removed and spinal fluid should flow through the needle. If no spinal fluid appears, rotate the needle on its own axis, or withdraw it gradually a little. If there is still no flow, insert the needle a little deeper. The stylet should be replaced each time before any manipulation of the spinal needle. Occasionally the first two drops will be blood tinged. If the bleeding ceases, the spinal fluid may be collected; if it persists, the needle should be withdrawn and introduced at another interspace. The injection for spinal anaesthesia should never be made until clear spinal fluid has been obtained for dissolving the novocain crystals.

When clear spinal fluid flows through the needle hold the ampule (the top of which has been filed off) containing the novocain crystals under the needle so as to collect the drops of spinal fluid. We usually collect thirty drops to dissolve 100 mg. of anhydrous novocain crystals. As soon as the desired quantity is collected, replace the stylet so as to avoid the loss of spinal fluid. With a 2 c.c. syringe and a 1½-inch, 20 gauge, needle, to mix the contents of the ampule, the novocain is rapidly dissolved in the spinal fluid. The solution is drawn in the syringe and the syringe adjusted to the spinal needle. Gently withdraw the plunger of the syringe; if the spinal fluid returns, the needle is still in the canal. Slowly inject the solution. This should require one to two minutes. When the amount of novocain to be injected is less than the amount in the ampule used, it is best to dissolve the total amount in spinal fluid, calculate the number of drops to contain the desired dose, and discard the amount not needed before adjusting the syringe to the spinal needle.

Immediately after injecting the spinal canal, remove the needle and cover the site of the puncture with tincture of iodine, followed by collodion. Turn the patient on his back, put a pillow under his head, and keep the table flat. An assistant should record the patient's pulse and blood pressure every five minutes.

The patient should be draped immediately and the operation commenced. The anaesthesia is usually complete in five minutes after injection.

If the patient has a drop of fifteen points, in blood pressure, give adrenalin solution (1-1000), three minims, intramuscularly, and caffein sodio-benzoate, grs. 4, subcutaneously. Ephedrine sulphate one ampoule (gr. ¾), should be given intramuscularly.

With the type of anaesthesia used by us, a moderate Trendelenburg position may be maintained fifteen minutes after the spinal injection.

No attempt is made in this paper to give an

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analysis of the different drugs used in spinal anaesthesia, or their physiological action. Any good pharmacology and physiology may be consulted for this data. Evans' "Spinal Anaesthesia" has a chapter devoted to the drugs used, and their action, and is well worth studying.

Anhydrous novocain crystals in sealed sterile ampules (H. A. Metz & Co., N. Y.) are used routinely by us because novocain is the least toxic and most effective drug among the list employed for spinal anaesthesia at present, and the crystals dissolved in the patient's spinal fluid reduced to a minimum and foreign substance injected in the spinal canal. The novocain is absorbed rapidly and with no apparent toxic effect upon the patient.

The ampules containing novocain crystals are easily obtainable, and several should be kept submerged in a jar of alcohol, ready to be removed for immediate use. Ephedrine sulphate is an active alkaloid principle derived from MaHuang, which is indigenous in China, and has been known in Chinese medicine for more than five thousand years. It is a powerful stimulant of the sympathetic nervous system and raises blood pressure in this way. Ephedrine is effective on oral as well as subcutaneous administration. It has a more sustained effect upon the blood pressure than adrenalin, and in the doses used by us has produced no toxic effects. Adrenalin apparently acts with more rapidity and is given in small doses, minims 2 and 3, when a rapid stimulation of the blood pressure is desired. Larger doses of adrenalin apparently give no more rapid stimulation, but exaggerate the shock when they wear off. Caffein sodiobenzoate stimulates respiration and gives the patient more of a feeling of well being. It is particularly beneficial for those who develop a pallor shortly after the spinal injection, or appear to be poor risks before operation.

In our more recent cases we have been able to keep the blood pressure just about the base level, or level before any stimulation was given, by the use of ephedrine before and during operation.

Patients with high blood pressure usually have a more pronounced drop in their blood pressure. Patients with low blood pressure usually have a very slight drop. The maximum drop is usually seen in ten to fifteen minutes after the spinal injection.

Spinal anaesthesia has a particular advantage in operative obstetrics, because it apparently does not affect the baby, and respiration in the baby is usually more quickly established than with any other anaesthesia. The tone of the uterus after delivery is better than after a general anaesthetic. Small amounts of novocain, usually 50 mgs., are sufficient for complete anaesthesia for forceps and repair of lacerations of the cervix, vagina, and perineum.

Stuart Circle Hospital.

JUDAS—MEDICAL ROBOTS.

By A. F. WOOD, M. D., Parksley, Va.

Since the era of Hippocrates and Socrates, 460-399 B. C., the philosophy of life and science of medicine has had its foundation. The coincident truths taught by these two have constituted the morning and evening star of hope of the real physician—as acquisition of the true art of medicine spontaneously develops true philosophy—stimulating him to never-ending study and endeavor in his efforts in acquiring knowledge and understanding worth while, to direct him in alleviation of human distress, pain and disease. No beaten path has been followed, but every route has been trod, all areas surveyed and many crevices searched. But only the outstanding truths have been appropriated of all knowledge discovered, until today thanks to loyalty and industry, our healing art very closely approximates an exact science. To my mind the history of medicine records the most thrilling adventures in all the field of human endeavor, not equalled by that of soldiers, explorers, statesmen or others. At every stage a battle has had to be fought to a finish, in importance to society at large greater than any social engagement of ancient or modern warfare. The intrinsic fact is that in all of these stormy contacts, the host of disease was met and vanquished single-handed by a loyal medical scientist who hastily revealed his tactics and end-results to all mankind.

So it is today, and ever will be. We leave one battlefield and march on to another, happy in the certitude of accomplishment. There are unsung martyrs strewn along this tragic and glorious path, and heroes galore.

But, what of the maligners and deserters? Well, they have marched along with us, in our protected rear ranks since we began the advance. Never participating in a test, but ever on hand after the mopping up to share in any

reward or seize any opportunity that may present. These, with slackers, are they whom we designate charlatans for want of a better term and from reluctance in using a worse. This appellation is accepted by the profession and should fulfill its definition.

We need not consider the quacks, cults and nostrum venders, for society and legal statutes repudiate them. They are outsiders, and as easy of detection as their blood brothers who are parasitic on other professions and arts and are commonly referred to as shysters, jacklegs, bootleggers and what not.

It is hard to discuss our charlatans in terms of polite and refined social usage, but I will do my best. While these charlatans may be detected in all ramifications of the healing art, their principal habitat is a smooth sailing specialty boat navigating a dark stream. Since quitting their respective institutions of exact information, they have dropped all effort at acquisition of useful knowledge, and at the beginning of their work they have become parasitic on life's strong oak. Science fades from their mental horizon and becomes only a dim memory. Their indifference to intellectual improvement obstructs constructive and sustaining effort in any other useful field. And, so, they continue in their constricted sphere, lethargic to the extent that even thinking of effectual labor becomes an obnoxious burden to their emaciating minds, and they turn in their extremity to paths of least resistance.

As before mentioned, the easy specialties furnish them their ideals. They lack not business acumen, so they acquire and furnish an office, decorate it with bright lights, devices and signs and buttons, install various mechanical apparatuses whose complicated insides are so geared by man that they may be manipulated by the difficult procedure of digital switch pressure. These robots part their hair in the middle from behind straight down to the front (here accuracy counts), throw wide the portal of their guilded parlors to innocent public moths, and the shearing begins.

The crowd becomes processional to these meccas of youth and health. Once the promised restorative drama begins, the concentration and diagnosis (regarded as of minor importance) is left to the patient; the intelligent apparatus administers the therapy, and if the patient cannot reach the button a friend might perform the function.

Consideration here leaves us in some doubt as to exactly where the medical graduate appears in the picture. We ponder and a great light registers, an afferent impulse has whispered, "Press Agent."

Now we cannot deny the value of these instruments, used in occasional isolated and selected cases, but we might be reasonably pardoned for resenting the revolting imposition on a gullible public of a panoramic view of a field of therapeutic efficiency urged upon them by these button pushers.

The regular physician knows this field as such does not exist, and can we imagine the savant who, at the culmination of research in the spectral field, in his most buoyant moment of success in achievement, visualizing the employment of the ultra violet ray in dissolving and dissipating stones, unraveling kinks in intestines and lining up cogs in ungeared minds? Such are the claims of insidious advertising.

Yet, the less the understanding of the layman of the *modus operandi* of a vaunted cure, the blinder his faith and stronger his trust.

There is some compensation in the knowledge that disillusion comes to them shortly and they will ultimately seek the benevolent counsel of a regular doctor.

My practice being confined to a rural-town section, of necessity my experience with this type of irregular practitioner is limited. Therefore, I have delineated what I trust are mild instances. There may be less pernicious examples; worse would be difficult to conceive.

They may be recognized by their Bertillon symptoms with other objective signs. Their finger prints will appear under microscopic scrutiny. Subjective symptoms there are none.

How may we curb this malady, fast assuming epidemic form and which will certainly become pandemic? Its practice has sufficiently relieved its operators of pangs of conscience, and, carried to the n-th power, it might be used to cure the public of the fatal consequences of their follies. Then, where would *we* be at? The result would cause little use for preachers, lawyers or doctors. We can realize *some* advantages that would accrue from such an ideal state of affairs; also, the preachers and doctors could go to work and make a living.

But can this activity be controlled? Ostracism might be suggested. But is it tenable? Is it the most efficient rust-proof instrument

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within our reach? We know it as an ancient and clumsy tool, but metamorphoses are the rule in medicine, and we might change its design and lustre by close thought, and make it work. At every turn we perceive unexpected difficulties in resorting to this measure, for these self-sufficient gentlemen have a monumental egotism. They set themselves so high up on a pedestal of their own esteem that they not only reject all consideration of the value of our advice, but audaciously contemplate numbering among their cases patients referred by physicians. Stentor like, they proclaim their own virtues and drown all other sound. They are shrewd and crafty and lack not a knowledge of their most expeditious course. The very nature of their perpetrations force them to pad lone trails, the mighty dollar being the lure leading them into nooks and corners in a wilderness of misunderstanding. Their diplomas are mighty shields that protect them from legal entanglements, and embarrassing alliances they have none. From a loyalty standpoint in their own emotions, that emblem that *we* value as a badge of merit, bestowed upon us by learned and honored preceptors in recognition of a good beginning, is but a scrap of paper. But they recognize its advertising possibilities and ruthlessly employ it for this degraded office.

Again, what is the remedy for this evil? Fumigation, or lethal gas? The former is an almost discarded measure, but it is of proven value when directed against rodents, causing them, at least, to change their quarters from one burrow to another, though we may doubt that extermination results. Lethal gas here (talking) has been worked to a "frazzle."

So, who knows? At least I am agreeable that the Board of Health take charge of the situation.

But, withal, a poor prophet may envision in the unobstructed progress of medical science, one hundred years hence, a race of men far in advance of the world today in physical and intellectual stature, with double the statistical limits imposed in this era.

And have we no reward? If we can only grasp the truth that nature is prodigal in her gifts to deserving merit! The consciousness of rectitude with which one can lay down and sleep, unashamed, with naught to fear, is worth all of brigand gold. The simple gift of a clear conscience cannot be purchased by the wealth of a million Fords.

I recall an old preceptor whose loyal deeds have been poorly rewarded and barely appreciated through a life time of service to medicine and mankind. I met him for the last time in his office in the Medical College building. We spoke of old times and mentioned rewards. I told him my whole medical foundation took form at his feet twenty-seven years ago; that, under the magic touch of his hands, guiding crayons, clay and scalpel, with the studied and deliberate explanations of his stuttering tongue, I had viewed the human body in its creation, with its innermost physical mysteries revealed.

This grand old man shed a tear and replied, "Well, Wood, what more reward could one desire?" He thought not of me individually, but of the thousands who had likewise benefited from contact with him. Philosopher, artist, scientist, scholar, physician, fellowman —the antithesis of our subject—John!

INDIVIDUAL HEALTH DEPARTMENT.*

By E. B. COXWELL, Roanoke, Va.
Director, Department of Physical Education, Roanoke, Y. M. C. A.

There was a long period of time in which it was rather difficult to classify physical education. Certainly during its early infancy the educators must have protested any claim of relationship. And may I say by way of parenthesis, having served part of my apprenticeship, that the methods generally employed in medicine a quarter of a century ago would cause you to frown.

Physical education, like other professions, has raised its standards and requirements, and today we have in our ranks P. H. D-s. and M. D-s. who do credit to the field of education. Men like McKenzie, of Philadelphia, McCurdy, of Springfield, Sargent, of Harvard, Steinhaus, of Chicago, and a host of others, are familiar names almost the world over.

Today a graduate of physical education from our best colleges either has or is within a year or less of his A. B. or B. S. degree, and one, two, and in some cases three years of his M. D. These degrees are available through such Universitites as Vanderbilt, Chicago, and, I understand, Harvard and Yale, besides a large number of others.

I hope no one thinks from what I have said that our profession is free of quackery any

*Read before the Roanoke, Academy of Medicine.

more than is medicine. We have a few "neck breakers" to deal with where you have to contend with spinal adjusters, and, may I add, our friends get the same kind of reception as do yours.

Passing hastily now to the main point of my paper. Physical education today consists of *active* and *passive* forms of exercise. I cannot conceive of the time when we shall miminize the value of camping, swimming, gymnastics, play-life and a vast number of other active forms of exercise, but it is to the passive form which I wish to direct your attention.

Passive exercise is fulfilling a great need in the lives of men who cannot, because of infirmities of one nature or another, participate in active exercise. During my brief stay in this city I have learned to know and respect several of you physicians. Some half a dozen are active in our gymnasium work. I believe it has been through these contacts that men like Drs. Lawson, Whitman, Johnson, Jackson, and others have referred patients to us for exercise.

I know of some, and no doubt there are other physicians who have patients that need exercise but who cannot stand strenuous activity. For such men we have at your disposal one of the best equipped departments in the South. We term this The Individual Health Service Department—for the sick and convalescing we will handle only under the direction and prescription of physicians.

You know the value of sweat baths and heat for chronic lumbago and neuralgic conditions, especially when followed by massage. There are other cases of which you are far more capable of evaluating such treatment than I.

Our equipment consists of an electric bath cabinet, hydro-therapy cabinet, tables, infra-red and ultra-violet lamps, and dressing and rest booths.

We are catering to those who are well and strong, and who appreciate the mental and physical relaxations to be derived from a Turkish bath, and the like.

In conclusion, may I extend you a welcome to come in and inspect our new department, and if we can serve you and your practice, I assure you your prescriptions will be carried out carefully and thoroughly.

Medical News of the Past

The Former Medical Society of Virginia.

Prior to the organization of our present State Medical Society, there existed a society in Virginia, which was known as the Medical Society of Virginia. It was chartered under this name in 1823. It then held its meetings in the Hall of the Richmond Library Association, the annual meeting being on the third Tuesday in May. We have little information in regard to the organization at this time, except that it ceased to function at some time during the fifties.

Our informant gave us the following as list of officers of the organization in 1852:

President—Dr. B. R. Wellford.

Vice-presidents—Drs. James Beale and C. P. Johnson.

Recording Secretary—Dr. P. Claiborne Gooch.

Corresponding Secretary—Dr. W. D. Haskins.

Treasurer—Dr. James Bolton.

Librarian—Dr. Wm. J. Clarke.

Assistant Librarian—Gabriel Ralston.

Committee on Publication—Drs. G. A. Wilson and A. E. Peticolas.

Our present Medical Society of Virginia was organized at a meeting held in Richmond, November 2, 1870, and applied for and received a charter following that date.

Proceedings of Societies

Virginia State Board of Medical Examiners.

At the examinations held by the Virginia State Board of Medical Examiners, in Richmond, June 18-22, 110 applicants were granted certificates to practice in Virginia on the basis of examination and 16 were licensed through endorsement. Those licensed by examination are:

Dr. G. A. Andrews, Mt. Gilead, N. C.
Dr. C. L. Baird, Buckingham, Va.
Dr. H. H. Ballard, Peterstown, W. Va.
Dr. J. T. Barnes, Kenly, N. C.
Dr. S. O. Bennett, Gretna, Va.
Dr. W. G. Bishop, Galax, Va.
Dr. E. D. Blackman, Newport News, Va.
Dr. Rex Blankinship, Naruna, Va.
Dr. J. W. Bolen, Jr., Galax, Va.
Dr. C. H. Bondurant, Roanoke, Va.
Dr. Thomas Bradley, Washington, D. C.
Dr. J. R. Brown, Huntington, W. Va.

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Dr. Margaret Buckner, Cynthiana, Ky.
Dr. O. K. Burnette, Leesville, Va.
Dr. F. L. Byers, Harrisonburg, Va.
Dr. A. R. Carter, Dry Fork, Va.
Dr. A. N. Chaffin, Wytheville, Va.
Dr. A. C. Chandler, Kittyton, Tenn.
Dr. A. B. Choate, Huntersville, N. C.
Dr. L. N. Claiborne, Waynesboro, Mo.
Dr. H. R. Coleman, Jr., Collierstown, Va.
Dr. C. C. Cooley, Phlegar, Va.
Dr. S. L. Cooke, Sandy Level, Va.
Dr. E. L. Copley, South Hill, Va.
Dr. F. D. Costenbater, Norfolk, Va.
Dr. A. D. Daughton, Falls Church, Va.
Dr. A. C. Davis, Roanoke, Va.
Dr. A. R. Dawson, Reedville, Va.
Dr. R. M. DeHart, Blacksburg, Va.
Dr. A. McG. Duval, Roadsville, Va.
Dr. W. J. Ellis, Crooksville, Ohio.
Dr. D. V. Estill, Meadow View, Va.
Dr. C. D. Farrow, Fife, Va.
Dr. N. P. Fitts, Rocky Mount, Va.
Dr. M. M. Fliess, Clifton Forge, Va.
Dr. E. S. Frazier, Greenville, Ky.
Dr. T. I. Gandy, Ettrick, Va.
Dr. R. D. Garcin, Jr., Richmond, Va.
Dr. T. G. Gaskins, Bridgeton, N. C.
Dr. Arthur E Glover, University, Va.
Dr. W. A. Graham, Hillsboro, Ky.
Dr. J. M. Green, Quitman, Ga.
Dr. J. H. Greene, Clark, Ala.
Dr. C. Y. Griffith, Hague, Va.
Dr. C. S. Groseclose, Ivanhoe, Va.
Dr. D. O. Hamblin, Providence, R. I.
Dr. C. L. Harshbarger, Rockingham Co., Va.
Dr. W. F. Hatcher, Clifton Forge, Va.
Dr. T. W. Heironimus, Jr., Grafton, W. Va.
Dr. O. L. Hite, Virgilina, Va.
Dr. L. W. Holladay, Durham, N. C.
Dr. H. H. Holt, Washington, D. C.
Dr. B. A. Hopkins, Buffalo Ridge, Va.
Dr. G. W. Horsley, Richmond, Va.
Dr. T. N. Hunnicutt, Jr., Newport News, Va.
Dr. W. C. Hutcheson, Boydton, Va.
Dr. T. H. Hutchinson, Wise, Va.
Dr. J. M. Jabbour, Roanoke, Va.
Dr. C. F. Johnston, Bluefield, W. Va.
Dr. T. E. Knight, Whaleyville, Va.
Dr. F. E. LaPrade, Republican Grove, Va.
Dr. Thomas C. Lawford, Nuchols, Va.
Dr. M. H. Legum, Norfolk, Va.
Dr. H. S. Martin, Selma, Ala.
Dr. R. W. C. McClanahan, Roanoke, Va.
Dr. E. M. McDaniel, Fafetteville, N. C.
Dr. C. D. Moore, Cambria, Va.
Dr. J. M. Moore, Petersburg, Va.
Dr. J. E. Nance, Linwood, N. C.
Dr. C. A. Nunnally, Cumberland, Va.
Dr. Paul Otto, Reading, Pa.
Dr. N. G. Patterson, Staunton, Va.
Dr. B. L. Parrish, Richmond, Va.
Dr. M. B. Payne, Clifford, Va.
Dr. T. B. Payne, Stafford, Va.
Dr. B. F. Pearce, Princeton, N. C.
Dr. R. T. Peirce, Jr., Newport News, Va.
Dr. Geo. D. Pettitt, Clifton, N. C.
Dr. J. A. Pilcher, Jr., Roanoke, Va.
Dr. W. G. Preas, Johnson City, Tenn.
Dr. J. P. Pregnall, Monroe, N. C.
Dr. R. M. Reynolds, Norfolk, Va.
Dr. J. S. Richardson, White Gate, Va.
Dr. D. W. Ritter, Winchester, Va.
Dr. C. R Robins, Jr., Richmond, Va.
Dr. J. H. Robinson, Shinnston, W. Va.
Dr. W. L. Robinson, Ivy, N. C.
Dr. T. R. Rolston, Staunton, Va.
Dr. P. Ryland, Jr., Clarendon, Va.
Dr. C. L. Savage, Portsmouth, Va.
Dr. W. A. Seawell, Lemon Spring, N. C.
Dr. H. A. Shaffer, Parsons, W. Va.
Dr. D. M. Shevitz, Smolowitz, Russia.
Dr. R. R. Sisson, Bedford, Va.
Dr. T. M. Sloan, Charlotte, N. C.
Dr. F. I. Steele, Bower, W. Va.
Dr. W. C. Stephenson, Jr., Roanoke, Va.
Dr. W. P. Stull, Lexington, Ky.
Dr. S. D. Sutliff, Jr., Shiffensburg, Pa.
Dr. E. T. Terrell, Jr., Fredericks Hall, Va.
Dr. R. C. Thomason, Roanoke, Va.
Dr. Wm. Tomlinson, Jr., Richmond, Va.
Dr. J. I. Turberville, Century, Fla.
Dr. C. M. Turman, Jr., Hillsville, Va.
Dr. R. L. Waddell, Scottsville, N. C.
Dr. J. D. Ware, Norfolk, Va.
Dr. H. B. Weinberg, Petersburg, Va.
Dr. B. W. Wilkinson, Cottagesville, W. Va.
Dr. E. G. Winstead, Ransomville, N. C.
Dr. P. H. Winston, Virgilina, Va.

The following applicants were granted licenses through endorsement:

Dr. Aubrey W. Armentrout, Roanoke, Va.
Dr. C. S. Greham, Leona Mines, Va.
Dr. H. L. Hamilton, Washington, D. C.
Dr. J. T. Jackson, Leesburg, Va.
Dr. D. C. Keister, Tannersville, Va.
Dr. F. L. Lander, Jr., Charlotte, N. C.
Dr. Harry Meyer, New York, N. Y.
Dr. W. H. Montague, Baltimore, Md.
Dr. R. A. Pogue, Covington, Va.
Dr. H. W. Rollings, Jr., Wardensville, W. Va.
Dr. E. G. Scott, Lynchburg, Va.
Dr. M. L. Steele, Bower, W. Va.
Dr. Caleb S. Stone, Jr., University, Va.
Dr. R. B. Wilson, Jewel Ridge, Va.
Dr. Theodore Wollak, Baltimore, Md.
Dr D. D. Young, Washington, D. C.

Bedford County Medical Society.

Dr. G. E. Heller was host to the Bedford County Medical Society at a supper on the occasion of their regular quarterly meeting held at Bedford, July 2, 1929. The most important action of the meeting was the election, as auxiliary members of the society, of the druggists and dentists of the county. Interesting talks were made by Drs. F. O. Plunkett and Dwight L. Rivers, of Lynchburg, and Ennion G. Williams, Richmond.

The following are the officers for the coming year: President, Dr. T. P. West, Bedford; vice-president, Dr. M. W. Gibbs, Bellevue; anl secretary, Dr. R. A. Bennett, Bedford. The delegate and alternate to the Charlottesville meeting of the State Society were also elected at this meeting.

The Mid-Tidewater Medical Society

Met at Saluda, Va., the latter part of July, for its regular quarterly meeting. Dr. Hawes

Campbell, of Enfield, the president, was in the chair. After a business session at which delegates to the Charlottesville meeting of the State Society were elected (these will be named in a later issue), the visiting doctors were entertained at a splendid dinner at Hotel Bristow by the local doctors.

At the afternoon session, a paper was read by Dr. James D. Clements, of Ordinary, his subject being Ileocolitis. There was a general discussion of this paper, led by Dr. William Gwathmey. The outstanding thought brought out in this discussion was the fact that there has been a marked diminution in the incidence of the diarrheas during the summer as a result of improved sanitation. Dr. E. G. Harper, of Richmond, read a paper on Tuberculosis in Children, bringing out many features of interest on this subject.

The next meeting is to be held on the fourth Tuesday in October at Gloucester C. H., Va., at which time an interesting program is expected. Dr. M. H. Harris, West Point, is secretary of this Society.

Woman's Auxiliary, to the Medical Society of Va.

Annual Report of Post-Graduate Medical Auxiliary.

The present officers of the Post-Graduate Medical Auxiliary went into office at the January meeting. As we have only four meetings a year we have accomplished very little.

We have sent six subscriptions of Hygeia to the schools of Petersburg and one to Hopewell, and we are in hope of getting more subscriptions, as our chairman, Mrs. Lane Elder, is working very hard.

With the help from the Blackstone ladies we bought eight goose neck lamps for the Petersburg Hospital and four for Hopewell Hospital. We also sent to the Petersburg Hospital through the committee on hospital supplies, a complete layette and thirty comfort pillows with sixty pillow cases.

Mrs. Hoy, corresponding secretary, has sent cards of sympathy and sick cards to those members who were in need of such.

At the April meeting, Miss Alice Duggar, Red Cross Health Nurse, gave a very interesting talk on "The Visiting Nurse" or "Public Nursing Service." A committee was formed to study the situation more closely to see if it would be advisable for us to sponsor such a movement.

Our Auxiliary always entertains the graduating nurses and the staff of the Petersburg Hospital in May. Plans have already been made for such a meeting, entertaining not only the nurses but the doctors and wives of the Post-Graduate Auxiliary.

We have one new member, making a total of twenty-five paid members to date.

Respectfully submitted May 9, 1929.

KATHERINE S. JONES,
(MRS. H. C. JONES),
President Post-Graduate Medical Auxiliary.

PAID MEMBERS TO DATE OF POST-GRADUATE MEDICAL AUXILIARY.

Mrs. C. T. Jones	Mrs. George Reese
Mrs. Meade Edmunds	Mrs. W. P. Hoy
Mrs. Herbert Jones	Mrs. E. S. Gunn
Mrs. Bolling Jones	Mrs. T. F. Jarratt
Mrs. E. J. Nixon	Mrs. J. A. B. Lowry
Mrs. Wm. B. McIlwaine	Mrs. D. L. Elder
Mrs. D. C. Mayes	Mrs. R. H. Manson
Mrs. E. W. Young	Mrs. R. T. Hawks
Mrs. Wright Clarkson	Mrs. C. C. Tucker
Mrs. F. J. Wright	Mrs. J. H. Parker
Mrs. G. S. Fultz	Mrs. W. C. Webb
Mrs. H. M. Snead	Mrs. P. Jacobson
Mrs. W. A. Reese	

The Truth About Medicine

In addition to the articles enumerated in our previous letters, the following have been accepted:

Ciba Co., Inc.
Isarol—Ciba
Deshell Laboratories
Petrolagar with Milk of Magnesia
G. D. Searle & Co.
Sulpharsphenamine—Searle, 0.1 Gm. Ampules
Sulpharsphenamine—Searle, 0.2 Gm. Ampules
Sulpharsphenamine—Searle, 0.3 Gm. Ampules
Swan-Myers Co.
Canada Blue Grass Concentrated Extract—Swan-Myers
Parke, Davis & Co.
Ampoules of Pitocin
Ampoules of Pitressin

NEW AND NONOFFICIAL REMEDIES

Tablets Theocin Soluble, 2½ grains.—Each tablet contains 2½ grains of theocin soluble, formerly called theocin sodium acetate (New and Nonofficial Remedies, 1928, p. 424.) Winthrop Chemical Co., Inc., New York.

Perfringens Antitoxin.—B. Welchii Antitoxin.—Anti-Gas Gangrene Serum.—An anaerobic antitoxin (New and Nonofficial Remedies, 1928, p. 351) prepared by immunizing horses with gradually increasing doses of the toxin of *B. welchii*. The finished product is tested on pigeons by determining the minimum amount necessary to neutralize the M. L. D. of *B. welchii* toxin, the potency being expressed in units. The product is marketed in 100 c.c. bottles

of unconcentrated serum containing at least one unit per c.c.; in 50 c.c. bottles of unconcentrated serum containing at least two units per c.c.; and in 20 c.c. syringes of concentrated serum containing at least five units per c.c. H. K. Mulford, Co., Philadelphia.

Tetanus-Perfringens Antitoxin Refined and Concentrated—P. D. & Co.—An anaerobic antitoxin (New and Nonofficial Remedies, 1928, p. 351) prepared from the toxins of *B. welchii* and *B. tetani* by immunizing horses with repeated, gradually increasing doses of tetanus toxin and perfringens (*B. Welchii*) toxins until samples from treated animals show one unit or more of tetanus antitoxin per c.c. and one unit or more of perfringens antitoxin per c.c. In addition to use in the treatment of gas gangrene, this product is proposed for use as a prophylactic in conditions such as wound or contusions in the abdominal tract and as curative in cases of acute peritonitis and obstruction of the small bowel. It is marketed in packages of one syringe containing 1,500 units of tetanus antitoxin and 10 units of perfringens antitoxin. Parke, Davis & Co., Detroit. (Jour. A. M. A., May 4, 1929, p. 1521.)

Insulin—Squibb, 80 units, 10 c.c.—Each c.c. contains insulin—Squibb (New and Nonofficial Remedies, 1929, p. 197) 80 units. E. R. Squibb & Sons, New York.

Diphtheria Toxoid.—A diphtheria toxoid (New and Nonofficial Remedies, 1929, p. 368) prepared from diphtheria toxin of which the L+ dose is 0.25 c.c. The toxin is treated with formaldehyde according to the specifications of the U. S. Public Health Service until it is detoxified. It is tested for antigenic power by subcutaneous injection into guinea-pigs. Diphtheria toxoid—P. D. & Co. is marketed in packages containing one bulb (0.5 c.c.) of dilute diphtheria toxoid for the reaction test and two bulbs (0.5 and 1.0 c.c. respectively) of diphtheria toxoid; also marketed in hospital packages. Parke, Davis & Co., Detroit.

Petrolagar (with Milk of Magnesia.)—Liquid petrolatum (New and Nonofficial Remedies, 1929, p. 228) 65 c.c.; magnesia magma, 8 c.c.; emulsified with agar in a menstrum containing sugar, flavoring, sodium benzoate 0.1 Gm., and water to make 100 c.c. Petrolagar Laboratories, Inc., Chicago. (Jour. A. M. A., June 1, 1929, p. 1837.)

Bismarsen. — Sulpharsphenamine Bismuth. — Bismuth Arsphenamine Sulphonate.—The sodium salt of a bismuth derivative of arsphenamine methylene sulphonic acid with inorganic salts. It contains approximately 13 per cent of arsenic and 24 per cent of bismuth. Bismarsen is used in the treatment of syphilis. The drug is reported to be somewhat slower in its action than intramuscularly administered sulpharsphenamine or intravenously administered neoarsphenamine, but much more rapid than bismuth. More or less severe pains at the site of injection have been reported. Bismarsen is administered intramuscularly. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A., June 8, 1929, p. 1928.)

Digifoline—Ciba.—A digitalis preparation containing the active glucosides of digitalis, free from extractive matter. It is standardized to have the strength of digitalis leaves as standardized by the frog method of Focke. The actions and uses of Digifoline-Ciba are the same as that of digitalis. It may be administered orally, rectally, or by subcutaneous, intramuscular or intravenous injection. Digifoline—Ciba is marketed in the form of Ampules Digifoline—Ciba, Solution Digifoline—Ciba, Liquid and Tablets Digifoline—Ciba. Ciba Company, Inc., New York.

Concentrated Pollen Extracts—Swan-Myers.—In addition to the products listed in New and Nonofficial Remedies, 1929, p. 26, the following product has been accepted: Canada Blue Grass Concentrated Pollen Extract—Swan-Myers. Swan-Myers Co., Indianapolis.

Sulpharsphenamine—Searle, 0.1 Gm. Ampules.—Each ampule contains sulpharsphenamine—Searle (THE JOURNAL, April 20, 1929, p. 1349) 0.1 Gm. G. D. Searle & Co., Chicago.

Sulpharsphenamine—Searle, 0.2 Gm. Ampules.—Each ampule contains sulpharsphenamine—Searle (THE JOURNAL, April 20, 1929, p. 1349) 0.2 Gm. G. D. Searle & Co., Chicago.

Sulpharsphenamine—Searle, 0.3 Gm. Ampules.—Each ampule contains sulpharsphenamine—Searle (THE JOURNAL, April 20, 1929, p. 1349) 0.3 Gm. G. D. Searle & Co., Chicago (Jour. A. M. A., June 15, 1929, p. 2021.)

Ampules Luminal-Sodium (Powder) 2 grains.—Each ampule contains 2 grains of luminal-sodium (New and Nonofficial Remedies, 1929, p. 81.) (Jour. A. M. A., June 22, 1929, p. 2101.)

PROPAGANDA FOR REFORM

Phenobarbital.—Phenobarbital is the name given by the Revision Committee of the U. S. Pharmacopeia for the product introduced as luminal. Jobbers supply luminal on orders for phenobarbital—U. S. P. In the past, this has been the only thing which they could do, as the Winthrop Chemical Co., Inc., proprietors of luminal, own the patent for this substance. The patent expires, however, May 7, 1929, and several manufacturers are already preparing to put nonproprietary brands of phenobarbital—U. S. P. on the market after that date—which, of course, will be sold under the official name. (Jour. A. M. A., April 13, 1929, p. 1295.)

Colloidal Mercury Sulphide-Hille.—The Council on Pharmacy and Chemistry reports that the Hille Laboratories, Inc., Chicago, requested recognition of Colloidal Mercury Sulphide-Hille as a colloid prepared by the "condensation method", the stabilizing medium being a hydrolyzed protein "free from the properties responsible for the production of anaphylaxis in rabbits." As evidence for the value of the product the firm submitted the manuscript of a paper by G. E. Wakerlin and C. Eiseman which has been published, the manuscript of an unpublished paper by Wakerlin; and clinical data by R. H. Paterson. The unpublished paper by Wakerlin gives the results of preliminary animal experimentation which do not permit definite conclusions. The clinical trials of Paterson should be given little weight and cannot be taken to exclude risks from intravenous injection. The unpublished paper by Wakerlin (which is to be published in the *Archives of Dermatology and Syphiology* and was considered by the Council at the request of its editor) is thus far the chief available evidence in favor of Colloidal Mercury Sulphide-Hille and it seems to show that the product is now ready for clinical trial. The Council postponed consideration of the acceptance of the product to await the results of clinical trials. (Jour. A. M. A., April 20, 1929, p. 1349.)

Tryparsamide in Neurosyphilis.—Tryparsamide is indicated in certain types of neurosyphilis and has been used in systemic syphilis by some; but its efficacy there is probably much less than that of the arsphenamines. Tryparsamide has a toxic effect on the optic nerve and therefore should not be used in cases in which primary optic atrophy or neuroretinitis is recognized, either on ophthalmoscopic examination or suggested by the complaint of diminu-

tion of vision. During the course of treatment in an individual who has no pathologic changes in the optic disks, a careful ophthalmoscopic examination should be done before each injection in order to find the earliest possible neuritic damage. There are a variety of methods of treatment applicable to both systemic syphilis and neurosyphilis far superior to tryparsamide for the ordinary case and much less dangerous. (Jour. A. M. A., April 20, 1929, p. 1373.)

The Injection Treatment of Hemorrhoids.—The injection treatment of hemorrhoids was so viciously exploited by quacks that it was frowned on by most physicians. At present the method is used frequently by reputable proctologists. The English school has practiced the injection treatment with a 20 per cent solution of phenol in glycerin. J. Boas, in Germany, has reported 200 cases in which injections with alcohol were made. A solution of quinine hydrochloride and ethylurethane has its ardent advocates. The use of a dextrose solution, injected after a preliminary intradermal procaine hydrochloride injection, is the most painless and probably the safest procedure. In certain cases the injection treatment is inapplicable. (Jour. A. M. A., April 20, 1929, p. 1373.)

Prophylaxis and Treatment of Pertussis.—The use of convalescent serum in the prophylaxis and treatment of whooping cough has been disappointing. Vaccine therapy has been extensively employed. The opinions regarding the effectiveness of the vaccines are greatly at variance. The Council on Pharmacy and Chemistry has not admitted any "mixed" whooping cough vaccine to New and Nonofficial Remedies. In regard to simple pertussis bacillus vaccine it states that the evidence for its value either for prevention or for treatment is questionable. Drug therapy has fallen into discredit in the treatment of whooping cough. The use of X-rays, ultraviolet rays and other light treatment has been tried without convincing results. When the weather permits, the best results are obtained by fresh air treatment. (Jour. A. M. A., April 20, 1929, p. 1374.)

Annual Meeting of the Council on Pharmacy and Chemistry.—Among the subjects of special interest to the medical profession which were considered at the annual meeting of the Council on Pharmacy and Chemistry, held April 5th and 6th were: The Board of Trustees having requested that a special committee of the Council be appointed to pass on food products offered for advertising in the publications of the Association, the Council considered plans and methods of procedure for the work of such a committee. The Council discussed the rationality of a preparation combining type I and type II pneumococci in a serum for treatment of pneumonia and decided to publish a report on the present status of the serum treatment of pneumonia. The Council considered certain allegations that inferior and unfit ergot is being imported and used for the preparation of the pharmacopeial fluid extract and decided that, in consideration of the lack of evidence for this assertion and the assurances of the government that no inferior ergot had been imported since September 1, 1927, no report was required at this time. The Council asked its referee for scarlet fever immunization products to investigate the present status of such preparations accepted for New and Nonofficial Remedies and to report on the desirability of retaining or rejecting them. The Council discussed the status of streptococcus preparations for the treatment of rheumatic fever made in accordance with the method of Dr. J. C. Small previously found unacceptable for New and Nonofficial Remedies, and concluded that, while the products are suitable for controlled investigation, propaganda which invites their use in general is not justified at this time. The Council decided on the publication of a report on the dangers of serum therapy, particularly of protein sensitization. The Council discussed the wisdom of permitting under certain restrictions the advertising to the laity of preparations of liquid petrolatum, of agar products and of similar preparations which act because of their bulb but postponed action on this question. The Council decided to appoint a committee to report on the desirability and feasibility of the Council's undertaking the work of passing on natural mineral waters. (Jour. A. M. A., April 27, 1929, p. 1430.)

Book Announcements

The Treatment of Fractures. By LORENZ BOHLER, M. D., Chief Surgeon and Director of the Vienna Accident Hospital. Authorized English Translation by M. E. STEINBERG, M. S., M. D., formerly Senior Officer on the Surgical Service of the U. S. Public Health Service Hospital. Vienna. Wilhelm Maudrich. 1929. Octavo of 185 pages, with 234 illustrations. Cloth. Price, $5.00.

An Introduction to the Study of Physic. (Now for the first time published). By WILLIAM HEBERDEN. 1710-1801. A Prefatory Essay by LEROY CRUMMER, with a reprint of Heberden's, Some Account of a Disorder of the Breast. Paul B. Hoeber, Inc., New York. MCMXXIX. Octavo of 159 pages. Portrait in Photogravure. Six illustrations. Cloth. Price, $2.00 net.

Transactions of the College of Physicians of Philadelphia. Edited by WALTER G. ELMER, M. D., Third Series. Volume the Fiftieth. Philadelphia. Printer for the College. 1928. Octavo of 409 pages, with illustrations. Cloth.

The History of Nursing. By JAMES J. WALSH, M. D. Ph. D., Medical Director, Fordham University School of Sociology. New York. P. J. Kenedy & Sons, Publishers. Octavo of 293 pages. Cloth. Price $2.00. Postpaid $2.15.

The Challenge of Chronic Diseases. By ERNST P. BOAS, M. D., Attending Physician, Montefiore Hospital for Chronic Diseases, and NICHOLAS MICHELSON, M. D., Adjunct Physician, Montefiore Hospital for Chronic Diseases. New York. The Macmillan Company. 1929. Octavo of 197 pages. Price, $2.50.

Forty-Fourth Annual Report of the Bureau of American Ethnology. To the Secretary of the Smithsonian Institution. 1926-1927. United States Government Printing Office. Washington. 1928. Quarto of 553 pages. Illustrated. Cloth.

Observations on the Thunder Dance of the Bear Gens of the Fox Indians. By TRUMAN MICHELson. Smithsonian Institution. Bureau of American Ethnology. Bulletin 89. United States Government Printing Office. Washington. 1929. Octavo of 73 pages. Cloth.

Shabik'Eshchee Village. A Late Basket Maker in the Chaco Canyon New Mexico. By FRANK H. H. ROBERTS, JR. Smithsonian Institution. Bureau of American Ethnology. Bulletin 92. United States Government Printing Office. Washington. 1929. Octavo of 164 pages. Cloth.

XUM

Virginia Medical Monthly

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Editorial

Rheumatic Fever.

The term "rheumatism" must ever "intrigue" medical thought. The term is inaccurate, undescriptive, and, but for its time-attached relationship to all sorts of painful combinations in the articular and muscular systems of the body, has little meaning. Of course, it is an old medical term that when spoken gives layman and physician, alike, a certain general idea of what is meant. So it comes about quite naturally that the medical man, as well as the layman, continues to use the term to cover a wide range of maladies affecting the function of the joints and muscular mechanism of the body. But more serious becomes the continued use of this term in medical writing because the origin or etiologic factors and the complicating and associated pathology vary greatly. The varied forms of arthritis, both in the acute and chronic stages, make for confusion and misunderstanding. Acute rheumatism, subacute rheumatism, and chronic rheumatism, as terms, carry the effect of mislabeling and misbranding. Rheumatic arthritis and rheumatic endocarditis, gonorrheal rheumatism, rheumatic fever, each conveys only a slant of meaning giving an indication of the play of symptoms and of the possible etiologic side and the place of the exhibition of the malady.

Besides, subacute rheumatism foregathers under its definition an assortment of mild, recurrent, more protracted forms of disturbance of the joints or muscles that, probably, depend upon more prolonged or attenuated etiologic factors, while chronic rheumatism covers a multitude of decrepitudes of articular machinery and muscular structures of the body. Because of the foregoing reasons, of old-time association, scientific men continue to write of "rheumatism." However, as it is a term of such importance in the category of human disease, rheumatism engages, naturally, the attention of the medical mind; particularly, when there is presented new work upon many unsolved problems connected with the term.

Homer F. Swift,* of the Hospital of the Rockefeller Institute for Medical Research, read a valuable paper on rheumatic fever before the Institute of Medicine, Chicago, in March last. It is worth careful persual by practitioners because there is clearly presented accepted and new phases of this malady. At the outset, this writer calls attention to the importance of remembering that the term, rheumatic fever, must be used as describing a malady which may not always show arthritis or joint involvement. Polyarthritic involvement is usual, but not infrequently rheumatic fever may show itself in a rheumatic endocarditis without arthritic signs. Arthritis and fever, jointly occurring in most cases, however, make for the term rheumatic fever, while the visceral complications may occur without involving the joints. In cases of acute endocarditis, of chorea, of nephritis, of bronchopneumonia, of pleurisy, of nodosities presenting without arthritic signs, may be found instances of the occurrence of "rheumatic fever" without necessarily, displaying arthritic disabilities.

Let us follow Swift as the histologic characteristics of the disease are pointed out. It seems now possible "from the assembled observations of clinicians and pathologists to reconstruct a fairly complete histologic picture of the disease." To such an observation the busy clinician may wisely give due and mature thought. Of course, the picture is not uniform because different cases show variations histologically as they do clinically. The tissue implicated, the duration of the disease, the host's "reactivity," the dose and concentration of the etiologic agent in one area, and the variations in the virulence of the parasite, according to Swift, make variations. The reaction of rheumatic fever makes for a focal destruction of tissue. The processes of destruction in

*Jour. A. M. A., Vol. 92, No. 25.

foci may be so minute that special staining is necessary in order to bring them out or they may be so gross that a low power lens will show them up in some subcutaneous nodule the necrotic collagen fibres. In an Aschoff body one sees amorphous granular material; in synovial membrane, one may note small areas of necrosis; observers have noted on peri-articular tissue of joints, on heart valves, and in arterial walls the same destructive change. Besides tissue destruction, Swift calls attention to an exudation of fluid and cells. Synovial sacs are distended with a fluid of heavy fibrin content and loaded with polymorphonuclear neutrophils. Early subcutaneous nodules exhibit edema, deposition of fibrin and fairly numerous wander-cells. These changes are found in auricular endocardium, on the valves, and in the aorta.

In the more advanced stage, in many instances, there is a marked increase in the fixed cells and they form the characteristic components of the Aschoff body and the subcutaneous nodule.

It now appears that the arrangement of the cells in the Aschoff bodies, in the form of a rosette, results from the accumulation of these cells about minute areas of necrosis, that different arrangements are found in the trabeculae of the lung, in the pericardium and pleura because of different histologic make-ups. Swift emphasizes the importance of the blood vessel lesions in rheumatic fever. Following the lead of Klotz, rheumatic fever may be thought of as much as a disease of the blood vessels as it is of the joints. Thrombi in the branches of coronary arteries, and vascular lesions in many parts of the body have been observed: the endothelium of vessels swell and later become separated from the wall of the vessel. Beyond the blood vessels, exudative and proliferative pathology is found.

Rheumatic Valvulitis

Swift makes quite clear that an understanding of that extremely important morbid phenomenon, rheumatic valvulitis, is more easily gotten when considered as this sort of a process. Exudative and proliferative tissue reaction of unusual degree is observed. The constant motion of the valve, the stress and strain in the beating heart, appear to be determining factors in the localization of the rheumatic tissue reaction of the valves. But a broader conception of the morbidity of this "rheumatic" affection of the heart is to comprehend the fact of widespread involvement of the vascular system of the heart. This specialized vascular system is subject to the same vascular changes of blood vessels elsewhere as noted in vessel changes. Swift calls attention to three possible sites for initiation of valves, namely: (1) the covering endocardium; (2) the blood vessels in the valves; (3) the foci in the valve rings.

It is extremely important to note from Swift's article that there is a departure from the former conception of the origin of valvulitis. While it was formerly held that the infection extended from the surface of the valve, now it is believed that primary infection often begins in the substance of the valve; while it occurs often here, it occurs also upon the surface. Swift brings clearly to the reader that rheumatic endocarditis is a diffuse valvulitis with edema and infiltration of the cusps.

Etiology

Comment upon this interesting subject by Swift must be attended with thoughtful consideration.

Gonorrheal rheumatism produces a polyarthritis like that of rheumatic fever. Serious polyarthritis may be induced by dysentery bacilli, bacillus melitensis, tubercle bacilli, spirochaeta pallida, but eventually other symptoms appear that mark these as different from rheumatic polyarthritis. No filtrable virus, says Swift, has been shown, so far as he knows, to produce either acute or chronic lesions comparable to those of rheumatic fever.

All workers in this field have turned to streptococci as an etiologic explanation. Swift considers the question carefully and presents supporting evidence to show the uncertainty of accepting streptococci as a specific causative factor, but the relation of these organisms to the allergic phenomena in the body offers suggestive probabilities in the problem of discovering specific etiologic agents of rheumatic fever. Readers may well take time to review Swift's paper on this subject and read thoughfully his careful presentation of this phase of the cause of rheumatic fever.

State Medical Society.

The coming meeting of the State Medical Society at Charlottesville will be awaited with interest by the members of the Society. Besides the usual interesting features of the State

Medical meeting, the dedication ceremonies of the elaborate and splendid new building for medical teaching at the University of Virginia promises to give a peculiar attraction which will engage the keen and sympathetic attention of members of the Society. While the meeting is to be one mainly for the presentation of papers and addresses upon medical topics, the inspection of and visitation to the modern buildings by the members of the Society offer opportunity to observe the elaborate and perfected housing of the University of Virginia for the teaching of medicine. Every Virginian takes a peculiar pride in the welfare and work of the State University. Everyone must feel a sort of pride in its great progress and usefulness. But to the medical men of Virginia, the work of its great university in the field of medicine, a peculiarly deep interest always attaches. Medical men, probably as in no other one of the learned professions, hark back ever, in the days of teaching life, to institutions. Medical practitioners feel a close and intimate attachment to the work of the medical schools. Practitioners are ever looking to the medical schools of the country for new and advanced thought in medical research; practitioners visit clinics conducted by teachers of medical schools in order that experience and practice may be improved. So there is a close and inherent attachment between the active practitioners of medicine and the modern, well equipped and proficient medical school.

Virginia doctors will foregather at the University of Virginia this fall in order that they may show their interest in the splendid new buildings that are to be then dedicated and opened for medical teaching, as well as to gather, from contact and touch with the members of the faculty and distinguished visitors, inspiration for better work back home. Our members are urged now to lay their plans to go to Charlottesville for the coming meeting of the Medical Society of Virginia.

News Notes

Our Charlottesville Meeting.

It won't be long now! The time is getting short for doctores to make their plans to attend the meeting of the State Society to be held in Charlottesville, October 22nd, 23rd, and 24th. Don't forget to make your hotel reservations soon. The lists of hotels and their rates are given in the June issue of the MONTHLY. The new medical building of the University is to be dedicated on the first day of the meeting, and a large attendance is expected. The building is considered almost an architectural masterpiece and cost more than $1,400,000.00.

Dr. L. T. Royster, is General Chairman of the Albemarle County Medical Society Committee, and Dr. W. H. Goodwin, of the University Medical School Committee. Mrs. H. B. Mulholland is Chairman of the Committee for the entertainment of the ladies.

Cards to secure titles for papers will be mailed out this month, and we hope for prompt responses to them.

The American Medical Association.

Held its eightieth annual session in Portland, Ore., last month, under the presidency of Dr. Wm. S. Thayer, of Baltimore. There was a registered attendance of over three thousand from all parts of the United States. Drs. Southgate Leigh, Norfolk, J. W. Preston, Roanoke, and Fred M. Hodges, Richmond, were Virginia's delegates in the business sessions. In addition to these, other Virginians noted at the meeting were: Drs. J. Shelton Horsley, A. L. Gray, Warren T. Vaughan, and J. B. Stone, all of Richmond.

Detroit was selected as the next place of meeting. Dr. M. L. Harris, Chicago, succeeded to the presidency, and Dr. William Gerry Morgan, of Washington, D. C., a member of the Medical Society of Virginia and well known to many of our members, was made president-elect. Other officers elected are: Vice-president, Dr. Ernest A. Sommer, Portland, Ore.; secretary, Dr. Olin West, Chicago; treasurer, Dr. Austin A. Hayden, Chicago; speaker of the House of Delegates, Dr. Fred C. Warnshuis, Grand Rapids, Mich.

Dr. Fred M. Hodges,

Richmond, Va., was elected chairman of the X-ray Section of the American Medical Association, at its recent meeting in Portland, Ore. Dr. Hodges also acted as alternate for one of our delegates in the business sessions of the A. M. A.

The American College of Radiology

Held its annual meeting in Portland, Ore., at the time of the meeting of the American Medical Association, under the presidency of Dr. Alfred L. Gray, of Richmond, Va. This

society has a membership limited to about one hundred. Dr. Fred M. Hodges, Richmond, Va., was among those admitted to membership this year. Other Virginia members are Drs. A. L. Gray and Daniel D. Talley, both of Richmond. Dr. James T. Case, formerly of Battle Creek, Mich., now of Chicago, succeeded to the presidency. Dr. Rollin H. Stevens, Detroit, Mich., was made president-elect, and the following officers were re-elected: Executive secretary, Dr. Albert T. Soiland, Los Angeles (who has held this position since organization of the College); treasurer, Dr. Benj. H. Orndoff, Chicago; historian, Dr. I. S. Trostler, Chicago.

The next meeting will be held in Detroit, during the time of the 1930 meeting of the American Medical Association.

Some Vacationists.

Dr. J. L. Hamner, Mannboro, Va., recently returned home after a visit to West Virginia.

Dr. and Mrs. Dean Cole and children, of Richmond, have been visiting Dr. Cole's mother at her home near Chilhowie, Va.

Dr. Clarence H. Saunders is home again after a vacation spent fishing with a party of friends at Lake Cahore, Va.

Dr. and Mrs. E. T. Gatewood, Richmond, recently spent a vacation at Atlantic City, N. J.

Dr. John W. Scott returned to his home in Gordonsville, Va., early in July, after a visit to his son in Waynesboro, Va.

Dr. J. A. White, Richmond, and granddaughters, recently took a motor trip to Gettysburg, Pa., and other points of interest. The first of this month he left for his annual vacation at White Sulphur Springs, W. Va.

Dr. and Mrs. C. V. Montgomery have returned to their home in South Hill, Va., after a visit to Virginia Beach.

Dr. Charles H. Peterson, University, Va., spent two weeks in July visiting at Monterey, Va.

Dr. and Mrs. J. T. R. Sweeney and daughters, Richmond, have been spending sometime at their cottage at Buckroe Beach, Va.

Dr. and Mrs. C. C. Tucker have returned to their home at Blackstone, Va., after a stay of several weeks in New York City.

Dr. and Mrs. H. U. Stephenson, of Richmond, have been enjoying a vacation at Virginia Beach.

Dr. S. W. Maphis, Warrenton, Va., spent several days last month in Washington, D. C., to be with his son, Dr. Edward C. Maphis, who was operated on in a local hospital.

Dr. S. A. Riddick, of Norfolk, Va., recently visited friends in Smithfield, Va.

Dr. and Mrs. A. C. Monroe are home again in Richmond, after a short stay at Natural Bridge and Mountain Lake, Va.

Dr. and Mrs. R. H. Manson and family, of McKenney, Va., left the latter part of July for a motor trip through the Shenandoah Valley.

Dr. and Mrs. H. Stuart MacLean, Richmond, are spending sometime at their cottage at Thousand Island Park on the St. Lawrence River.

Dr. Meade S. Brent, Petersburg, Va., visited relatives at Heathsville, Va., in July.

Dr. and Mrs. Frank V. Fowlkes and sons, of Richmond, have been enjoying a vacation in Canada and other points of interest in the north.

Dr. Thos. S. Richardson, Waynesboro, Va., has been spending several weeks at Hot Springs, Va.

Dr. and Mrs. Clifton M. Miller and daughters, Richmond, left early this month for a visit in Asheville, N. C.

Dr. and Mrs. N. Thos. Ennett will return to their home in Richmond, Va., about the first of September after a visit to Scotland, England, Belgium, Germany, France, Switzerland and Italy. While abroad, Dr. Ennett has been attending a number of school Clinics held by foreign physicians.

Dr. Reid White, Lexington, Va., has been on a visit to Cape May, N. J., while Mrs. White stopped off in Washington, D. C.

Dr. and Mrs. Gerald A. Ezekiel, Richmond, visited friends in the mountains of Pennsylvania, after Dr. Ezekiel completed his service in the Medical Camp at Carlisle, that State.

Dr. J. A. Noblin and family of Radford, Va., spent their vacation with relatives in Scott County, Va.

Dr. and Mrs. John L. Thornton and son, of Warrenton, Va., have been visiting at Orkney Springs, Va.

Dr. A. M. Sneed, Toano, and Dr. J. M. Henderson, Williamsburg, were among those in attendance at the Orange Horse Show, where Dr. Sneed's colt, "Sailor Boy," won second place in his class.

Dr. and Mrs. James H. Smith and daugh-

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ters, Richmond, are home again after a vacation spent near Berryville, Va.

Dr. W. W. Wilkinson and family, of La Crosse, Va., motored to Asheville, N. C., where they spent their vacation.

Dr. Mortimer H. Williams, Roanoke, recently spent sometime with his family at their summer home near Irvington, Va. Drs. H. H. Wescott, A. L. Jones, and W. L. Powell, all of Roanoke, were his guests for several days.

Dr. and Mrs. Fletcher Woodward, Charlottesville, were recent visitors at Saluda, Va.

Dr. and Mrs. J. R. Bagby, Newport News, have been visiting at "Buena Vista" farm, just outside of Pulaski, Va.

Plans for a Texas Children's Hospital.

A children's hospital to be located in Dallas is now being planned by a group of Texas citizens. The plans call for a building with 100 beds. A drive for funds to defray the cost of construction and equipment—$550,000—has been inaugurated. The sponsors plan to raise also an endowment of $1,000,000 to cover the maintenance of fifty free beds, and it is hoped that eventually the hospital will be placed on an entirely free basis.

Dr. W. E. Chapin,

Of the Children's Memorial Clinic, Richmond, Va., has just left for Detroit where he will spend several weeks making observations at the Detroit Municipal Tuberculosis Sanatorium for Children.

Medico-Legal Journal Changes Hands.

The Medico-Legal Journal, published for many years in New York, recently began its forty-sixth year under the ownership, editorship and management of Dr. William J. Hickson, Director of the Psychopathic Laboratory of the Municipal Court of Chicago. The former editor, Dr. Alfred W. Herzog, will continue as editor emeritus and will contribute to its pages from time to time. He will also act as its New York representative. The journal will attempt to cover "all questions of law involving medicine—the latter taken in its broadest sense—the social diseases—and all phases of medicine involving law." The new address of this journal is 1909 North Ogden Avenue, Chicago, Ill.

Dr. Frank F. Thweatt, Jr.,

Of the class of '28, University of Virginia, Department of Medicine, was transferred July the 1st, from the U. S. Marine Hospital at Stapleton, N. Y., to the U. S. Marine Hospital, Ellis Island, N. Y., following his admission to the Regular Corps of the U. S. Public Health Service.

Dr. L. E. Walton,

Recently of Pullman, W. Va., has located at New Market, Va., for the practice of his profession.

Petersburg Unit of Gorgas Health Corps.

The following doctors are members of the local unit of the Gorgas Health Corps, recently organized in Petersburg, Va.: Drs. J. Bolling Jones, Robt. A. Martin, J. M. Harwood, Wm. A. Reese, Wright Clarkson, and Mason Romaine.

Civil Service Examinations.

The following open competitive examinations are announced, applications for which must be on file with the U. S. Civil Service Commission, Washington, D. C., not later than December 30, 1928:

Associate medical officer and assistant medical office;

Occupational therapy aide (arts and crafts);

Physician and associate physician;

Chief nurse and head nurse (Indian service); and graduate nurse, graduate nurse visiting duty, and graduate nurse junior grade (various services).

Physicians are urged to be careful when executing medical certificates on Civil Service applications. Discrepancies between medical examinations executed by private practitioners and those later made by Government medical officers often present a problem to the Government and cause disappointment to the applicant when the private practitioner making a physical examination of the applicant has been too liberal in his attitude toward physical disqualifications.

American Ophthalmological Society.

At the annual meeting of this Society held at Hot Springs, Va., in June, Dr. William C. Posey, of Radnor, Pa., was made president; Dr. Arnold Knapp, New York, president-elect, and Dr. Emory Hill, Richmond, Va., was re-elected secretary.

Associated with Dr. Wheeldon.

Dr. J. R. Grinels, of the class of '26, Medical College of Virginia, on July the 15th became associated with Dr. Thomas Wheeldon, Richmond, as assistant in orthopedic surgery. Their offices are at 318 West Franklin Street, this city. Dr. Grinels has spent two years of

the time since his graduation at Memorial Hospital, Richmond.

Married.

Dr. John Powell Williams and Mrs. Virginia Marshall Gregory, both of Richmond, Va., July 15th.

Dr. Joseph J. Anderson and Miss Laura Temple Drudge, both of Richmond, Va., July 6th.

Dr. Lacey S. Wornal, of the class of '28, Medical College of Virginia, and for the past year an intern at Memorial Hospital, Richmond, and Miss Corrine Amanda Snow, of Richmond, June 26th. They will make their home in West Virginia.

Dr. D. S. Divers,

Pulaski, Va., has been elected vice-president of the Pulaski Country Club.

Dr. Paul H. Ringer,

Asheville, N. C., has been elected president of the North Carolina State Board of Medical Examiners.

Dr. D. Lane Elder,

Hopewell, Va., has been appointed as surgeon for the Seaboard Air Line Railway, for Hopewell and vicinity.

Dr. Joseph F. Geisinger,

Richmond, Va., is out again after undergoing an operation for appendicitis, early in July.

Dr. Robert C. Bryan,

Richmond, Va., announces that, since disposing of his share of Grace Hospital, this city, he has become a member of the staff of the Stuart Circle Hospital Corporation. He also has offices in the Prestwould Apartments (Pine Street Entrance.)

Dr. R. L. Creekmur is still associated with Dr. Bryan.

Officers in Chamber of Commerce.

At a recent meeting of the Madison County Chamber of Commerce, at the courthouse in Madison, Va., Dr. J. N. Clore, of that place was elected president; and Dr. C. F. Ross and Dr. W. L. Early, Wolftown, vice-presidents.

Diphtheria is Preventable.

Children need not be infected with or die of diphtheria if parents can be made to realize the value of immunization, says the Metropolitan Life Insurance Co. of New York. Not one of the 178 children insured with the company who were reported by physicians to have died of the disease during the early part of 1929 had been immunized against the disease by injections of toxin-antitoxin according to the medically accepted procedure. In the great majority of these fatal cases the doctor was not called until the fourth day or later, so that the antitoxin treatment used when the disease has developed was not given soon enough to save the child.

Surgeon General Hugh S. Cumming,

Of the U. S. Public Health Service, was recently elected to honorary membership in the Delta Omega public health fraternity.

Dr. O. Noel Morison,

Of the class of '28, University of Virginia, Department of Medicine, was in June appointed Assistant Physician at the Binghamton, N. Y., State Hospital.

Dr. Charles S. Lawrence,

Winston-Salem, N. C., has been elected president of the Eighth District Medical Society of that State.

American Pediatric Society,

At the recent meeting of this Society, Dr. Joseph Brennemann, of Chicago, was made president and Dr. Howard Childs Carpenter, of Philadelphia, was re-elected secretary. Montreal, Canada, was selected as the next place of meeting.

Dr. Archer A. Wilson,

For the past several years of Switchback, W. Va., has just come to Richmond, to become resident in neuro-surgery of the Memorial and Allied Hospitals. He was graduated from the Medical College of Virginia in 1923 and served an internship at Sheltering Arms Hospital, this city, before locating for practice.

Infantile Paralysis.

While a number of cases of infantile paralysis have been reported in Roanoke City and County, this Summer, the State Board of Health states that there has not been a large enough number to justify alarm. Up to July 28th, thirty-three cases had been reported, at which time there seemed to be a cessation in the incidence of the disease.

It is urgently requested that all suspicious cases be reported promptly to the State Board of Health as the State authorities will be glad to cooperate in every way possible.

Dr. E. L. Caudill,

Elizabethton, Tenn., recently of Giles County, Virginia, has been appointed one of the physicians for the American Bemberg and American Glanzstoff Corporation plants, at that place.

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Dr. N. D. Morton,

Richmond, Va., is reported as much improved after an illness which confined him to bed for several weeks.

Virginia Society of Oto-Laryngology and Ophthalmology.

At the recent meeting of this Society in Staunton, Dr. F. M. Hanger, of that city presiding, the VIRGINIA MEDICAL MONTHLY was adopted as its official organ. It was decided to hold the next meeting in Roanoke in the Spring of 1930 and the following officers were elected: President, Dr. H. B. Stone, Roanoke; vice-president, Dr. Frank Smart, Norfolk; secretary-treasurer, Dr. Fletcher D. Woodward (re-elected), University. The executive committee is composed of Drs. Clifton M. Miller, Richmond; C. S. Dodd, Petersburg; and Frank M. Hanger, Staunton.

Award of Leslie Dana Medal.

In recognition of "the most outstanding achievement in the prevention of blindness and the conservation of vision," Dr. Ernest Fuchs, of Vienna, Austria, will be awarded the Leslie Dana Gold Medal for 1929, it is announced by Lewis H. Carris, managing director of the National Society for the Prevention of Blindness. The presentation will be made at the International Ophthalmological Congress in Amsterdam, Holland, September 10th. In selecting Dr. Fuchs, there was a departure for the first time from the usual custom of considering only Americans for this honor.

Campaign Against Tuberculosis in Mexico.

Forty tuberculosis dispensaries to be opened in various parts of Mexico are being planned by the Federal Government of that country. The physicians and their assistants on the dispensary staffs will be required to take a special three-months' course in the diagnosis and treatment of the disease. The organization of a National Tuberculosis Association is also proposed for the future by the Mexican Department of Public Health.

The American Psychiatric Association,

At its annual meeting held in Atlanta, Ga., selected Washington, D. C., as its place of meeting next year and fixed the dates as May 5-10. Dr. Earl D. Bond, Philadelphia, was elected president, and Dr. Clarence O. Cheney, Poughkeepsie, N. Y., secretary.

Dr. Joseph T. McCastor,

Who has been practicing for the past year in Thomas, W. Va., will leave shortly for New York to do post-graduate work. Mrs. McCastor will accompany him. They have recently been visiting Dr. and Mrs. Ramon D. Garcin, in Richmond. Dr. McCastor graduated from the Medical College of Virginia in 1927.

The Medical Center in Richmond.

Announcement has been made of plans for the development of the medical center in Richmond at the Medical College of Virginia by Dr. W. T. Sanger, president of the institution. The work will likely cover a number of years.

The first unit of the new center, a building for the college school of nursing costing approximately $300,000 for construction, equipment, and site, has been completed. The other units will go up as fast as funds, which are being sought in different directions, are available. Most of the ground to be used has already been acquired.

The buildings projected are:

1. A library to be constructed in association with the library of the Richmond Academy of Medicine, cost approximately $125,000.

2. A teaching unit to house the outpatient department and laboratories for the teaching of chemistry, bacteriology, and pathology, cost approximately $750,000.

3. A nurses' dormitory for the St. Philip Hospital school of nursing, an institution maintained by the college for negro girls, cost approximately $150,000.

4. A building for clinical dentistry, cost approximately $400,000.

5. A general hospital for white patients to be built in association with the outpatient department and teaching laboratories, cost $1,000,000 or more.

6. A gymnasium, auditorium, and recreational center, cost undetermined.

When this plan is carried through then it is hoped to provide dormitories for students in the schools of medicine, dentistry, and pharmacy.

$2,000,000 for the New Haven Hospital.

A gift of $2,000,000 from the General Education Board for a medical and pediatric laboratory and a dispensary for the New Haven Hospital has been announced by the President of Yale University. The hospital is affiliated with the Yale University School of Medicine.

Annual Report of the Gill Memorial Eye, Ear and Throat Hospital,

Roanoke, Va., for the year ending June 30,

1929, has just come to our hands. This shows an increase in volume of work in every department over the previous year. Improvements under contemplation by the hospital are an additional story and roof garden to the present structure. This new unit will also include an amphitheater so that at least fifty men may be accommodated at their annual post-graduate courses. It is stated that these courses are not intnded to attempt to prepare men for the practice of the specialties, but to give those already prepared and who are in practice a new viewpoint and a new impetus for further study and investigation. The subjects at these courses are presented by men of national reputation.

Dr. E. Newton Pleasants,

For the past year Associate Surgeon at the Memorial Hospital, Princeton, W. Va., has recently removed to his home in Richmond, Va., where he is associated with Dr. Alexander G. Brown, Jr., in the practice of internal medicine. Dr. Pleasants will be remembered as having served a one-year internship at Stuart Circle Hospital in Richmond previous to his service in West Virginia. He is a graduate of the Medical College of Virginia, class of 1927. Dr. and Mrs. Pleasants will make their home on Fauquier Avenue, North Ginter Park.

Dr. E. J. Nixon,

Petersburg, Va., has been elected one of the delegates from his local Post of the American Legion, to the State Legion Convention which meets in Petersburg early in September.

Dr. Calkins to Leave Virginia.

Dr. Leroy A. Calkins, for several years professor of obstetrics and gynecology at the University of Virginia, recently tendered his resignation that he might accept a similar position in the University of Kansas Medical School, Kansas City, Kan., on a half time basis. He will also have an office in Kansas City Mo., for private work.

Dr. F. Bayard Carter, of the Yale School of Medicine, has been elected to succeed Dr. Calkins as the head of the department of obstetrics and gynecology and will have the rank of associate professor. Dr. Carter was graduated in medicine from Johns Hopkins University in 1925.

Changes Among Health Officers.

Dr. Edwin L. McQuade, recently health officer of Henrico County, Va., has resigned to accept a position as instructor in epidemiology at Johns Hopkins University, School of Medicine.

Dr. A. L. McLean, who has been in charge of the Southampton County Health Department for several years, will take over the work in Henrico County.

Dr. B. B. Bagby, a native of and formerly engaged in health work in Virginia, has returned to this State after an absence of three years in Athens, Ga., and has become health officer of Southampton County.

Dr. Harry Walker, Courtland, Va., has been appointed health officer of Fairfax County, Va., and entered upon his duties in July. Fairfax County is resuming this special health work after a suspension of it for several years.

Dr. Warren T. Vaughan,

Richmond, Va., was elected to the board of censors of the American Society of Clinical Pathologists, at its meeting held in Portland, Ore., at time of the meeting of the American Medical Association.

Dr. Ford K. Lucas,

Of the class of '28, University of Virginia, Department of Medicine, after a year's internship at Roanoke Hospital, Roanoke, Va., has located at Blacksburg, Va.

Dr. Barton B. McCluer,

For several years located at Speedwell, Va., announces his change of address to Bon Air, Va.

Dr. Charles E. Dyer,

Formerly of Pulaski, Va., has been appointed Company physician to the Majestic Collieries Company, at Majestic, Ky., and recently entered upon his duties there.

Members of Warrenton Chamber of Commerce.

Drs. George H. Davis and M. B. Hiden, Warrenton, Va., have been elected as two of the directors of the Warrenton Chamber of Commerce, for the coming year.

Dr. A. R. Lutz,

Of the class of '27, Medical College of Virginia, after one year's general internship and one year as chief resident in surgery at the Charleston, W. Va., General Hospital, has been made assistant surgeon to the Welch Hospital No. 1, Welch, W. Va., and entered upon his duties there on July the 1st.

Dr. Robley R. Goad,

Of the class of '25, Medical College of Virginia, for the past year connected with the

Davis Clinic, at Statesville, N. C., is now in Washington, D. C., where he is taking an ear, nose and throat internship at the Episcopal Eye, Ear and Throat Hospital.

Dr. A. G. Coumbe,

Formerly of Washington, D. C., and for a number of years a member of the Medical Society of Virginia, resigned from the Veterans' Bureau on May the 15th. After an automobile trip to the Western coast, he expected to make his home in or near Washington.

Dr. E. G. Gill,

Roanoke, Va., was elected one of the vice-presidents of the American Laryngological, Rhinological and Otological Society, at its recent meeting in San Francisco, and was also made chairman of the Southern Section of this Association. The next meeting of this section will be held in Roanoke, Va., in January, 1930.

The Virginia Hospital Association

Is to meet in Charlottesville, Va., at 10 A. M., October the 22nd, the opening day of the Medical ociety of Virginia. Dr. J. M. Shackelford, Martinsville, is president, and Dr. John O. Boyd, Roanoke, secretary-treasurer.

Dr. Clyde F. Ross,

Richmond, Va., was appointed grand praetor of the Fifth Province of the Sigma Chi fraternity at the recent grand chapter meeting in Portland, Ore. Dr. Ross became connected with this fraternity when a student at Roanoke College.

Wanted—

An intern at the Petersburg Hospital for a period of twelve months. Salary $75.00 a month and maintenance. Address: Superintendent, Petersburg Hospital, Petersburg, Va. (*Adv.*)

For Sale or Lease—

Modern fireproof hospital, capacity 40 beds, fully equipped. Also has medical library. Open for inspection at any time. Located near good roads in progressive town. Attractive proposition to right party. Write "X. Y. Z." care VIRGINIA MEDICAL MONTHLY, Richmond, Va. (*Adv.*)

For Sale—

$12,000.00 village and country home, all modern conveniences with six acres of land. Three story attractive house with offices. Thickly settled community on car line, and railroad station. No better roads in State, makes work very easy. Doctor's location for past thirty years. Ten miles from Richmond. Nothing to sell except the property at $9,500.00. Want to return to my former city. Will introduce. Address "Dr. A. B. C.," care VIRGINIA MEDICAL MONTHLY. (*Adv.*)

Obituary Record

Dr. Edward Lionel Marshall

Died at his home at Big Island, Va., in June, 1929. He was a native of England and was sixty-eight years old. Dr. Marshall was a graduate of the class of 1891 of the College of Physicians and Surgeons of Baltimore, Md., and had been a member of the Medical Society of Virginia since that year.

At a meeting of the Bedford County Medical Society, shortly after his death, the following resolutions were adopted:

WHEREAS, Our Heavenly Father, in His divine providence has seen fit to take from our midst one of our colleagues, Dr. E. L. Marshall, of Charlemont, Bedford County, Va.;

WHEREAS, He has been a loyal and faithful member of the Bedford County Medical Society for many years, during which time he enjoyed the confidence and esteem of the entire profession;

WHEREAS, His Christian character and beneficent influence endeared him to a large clientele. Therefore, be it

RESOLVED, That we, members of the Bedford County Medical Society, do hereby express our deep sorrow at the loss of such a physician, and so valuable a friend, and wish to express our sincere sympathy to his family and relatives; and that a copy of these resolutions be placed on the minute book of the Bedford County Medical Society, published in the local newspapers, in the *Virginia Medical Monthly*, and be sent to his family.

T. P. WEST, *President*.
R. A. BENNETT, *Secretary*.

Dr. George W. Dingus,

Formerly a member of the Medical Society of Virginia, died at Coeburn, Va., May 22, 1929, of cerebral hemorrhage. He was seventy-five years of age.

Dr. Charles L. Bailey,

Sandston, Va., died at a Richmond hospital, August 1, 1929, after a brief illness. He was fifty-two years of age. Dr. Bailey was a graduate of the class of '01 of the Medical College of Virginia and a former member of the Medical Society of Virginia. His wife and three brothers survive him.

Dr. William Turbin Holland Brantley,

Bethel, N. C., died May 15, 1929, of acute nephritis. He was a graduate of the class of '27 of the Medical College of Virginia and was thirty-seven years old.